Which New Mac Should You Buy? Page 19

DECEMBER 1993

Macworld

THE MACINTOSH® MAGAZINE

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New 040 Macs

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PageMaker 5.0 vs. XPress 3.2

AN IN-DEPTH COMPARISON

PowerBook Duos 250 and 270c

PLUS 10 DOCKING STATIONS EVALUATED

Optical Storage

44 HIGH-CAPACITY DRIVES TESTED

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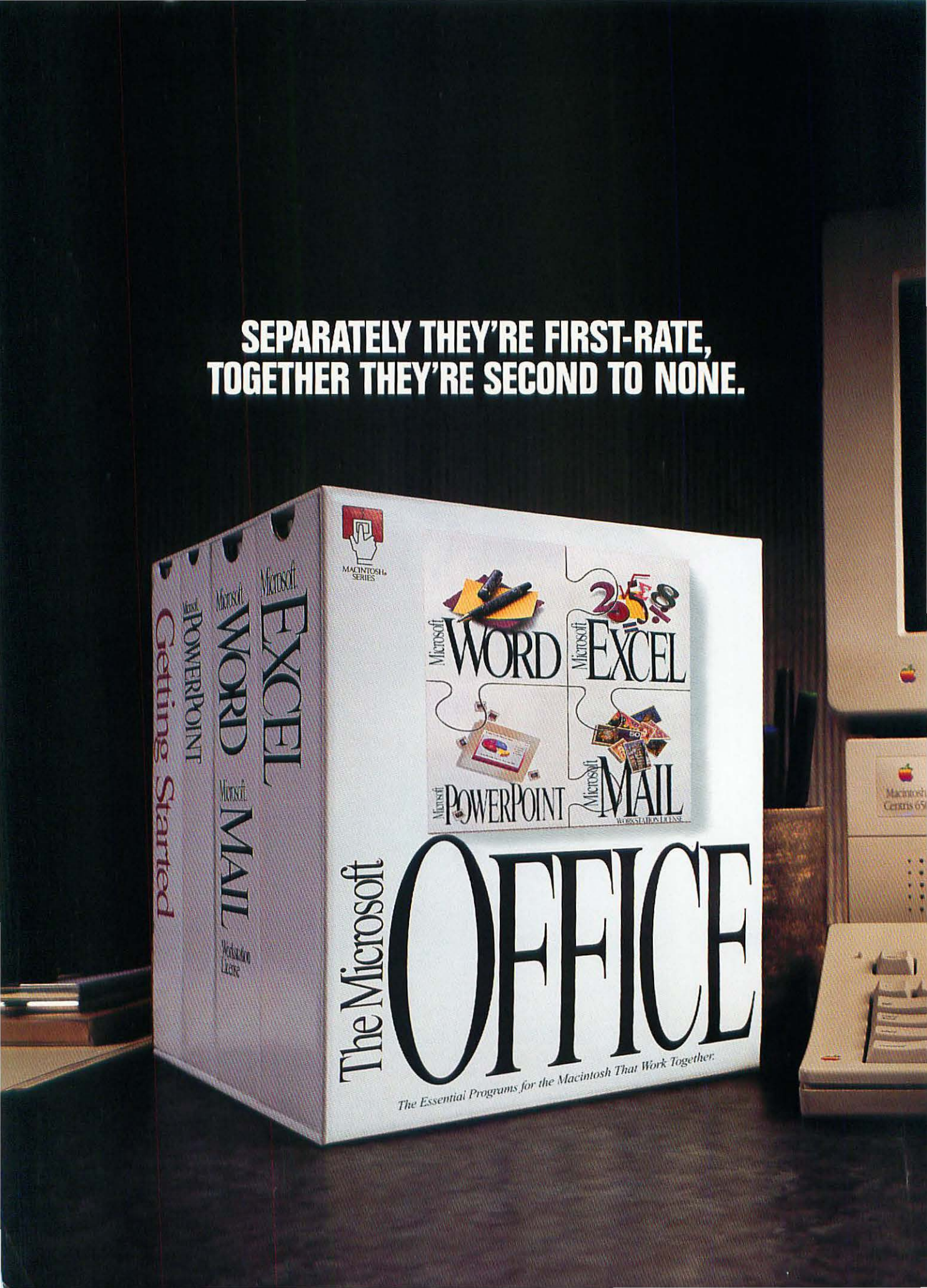

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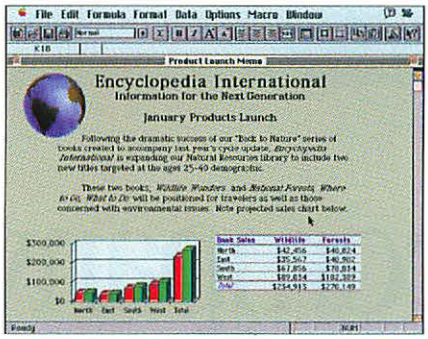

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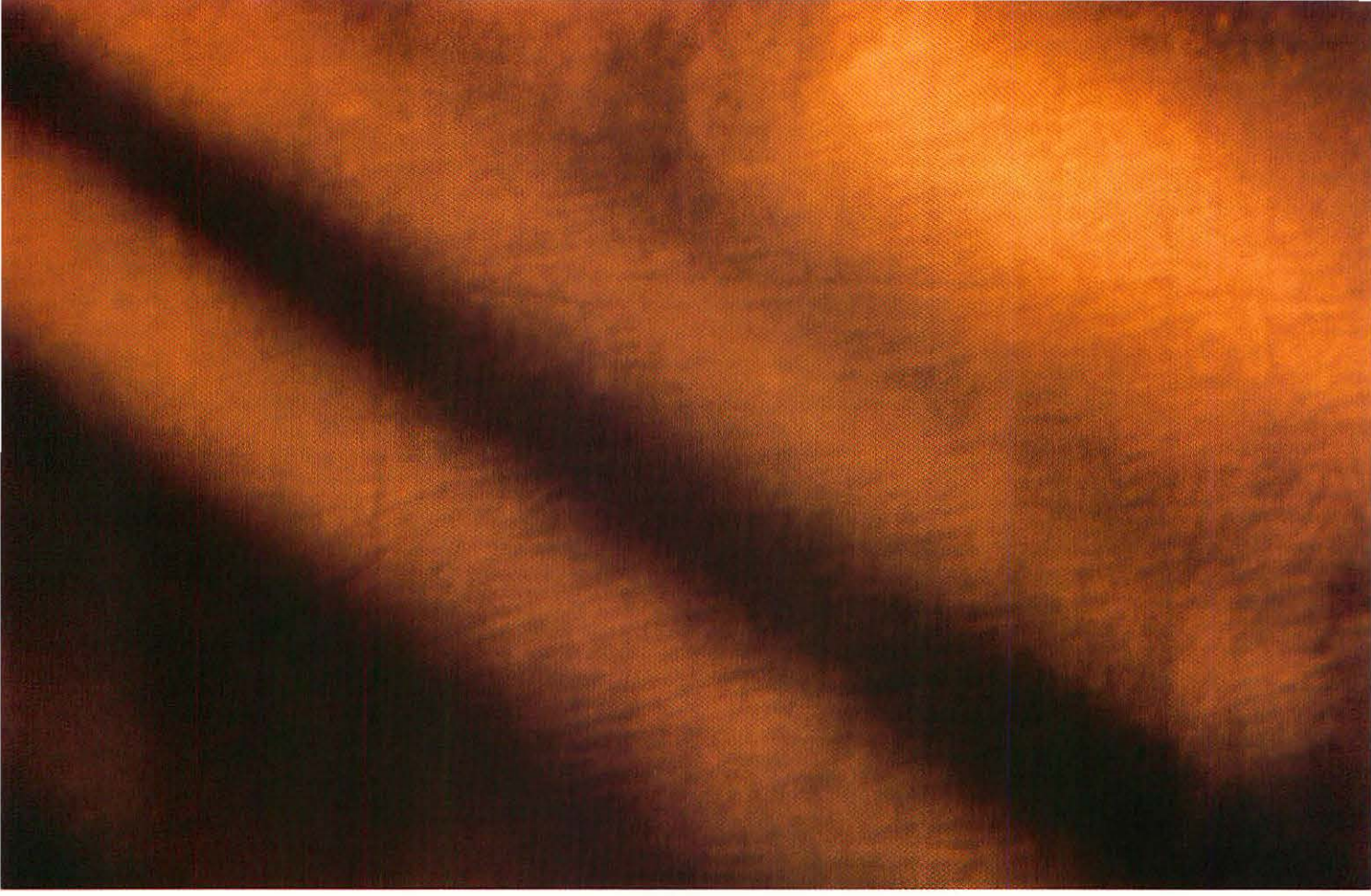

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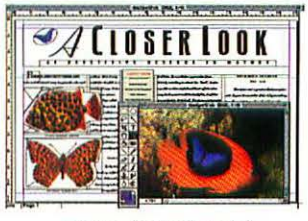

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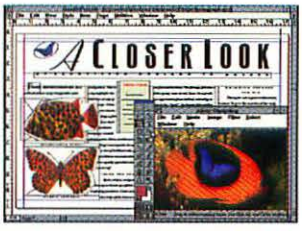

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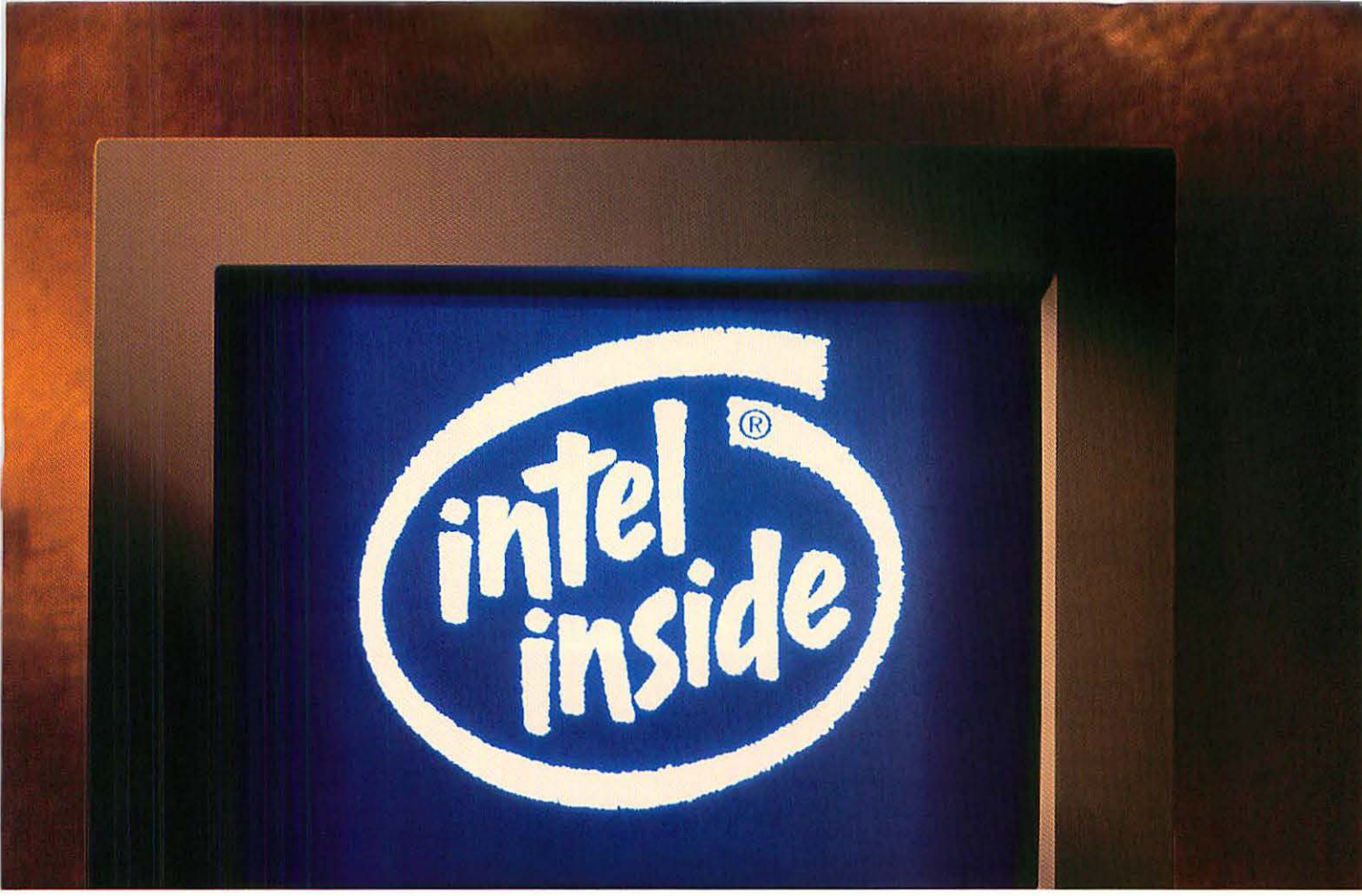

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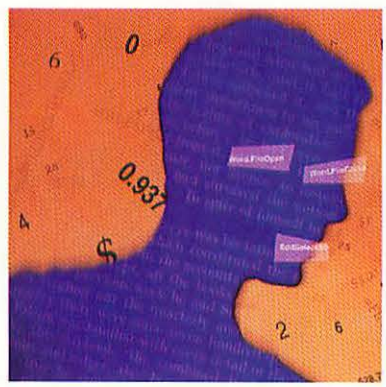

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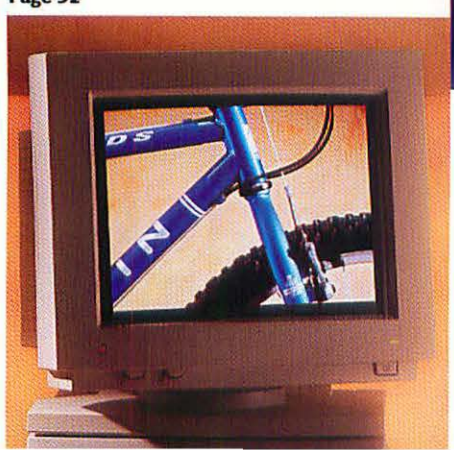

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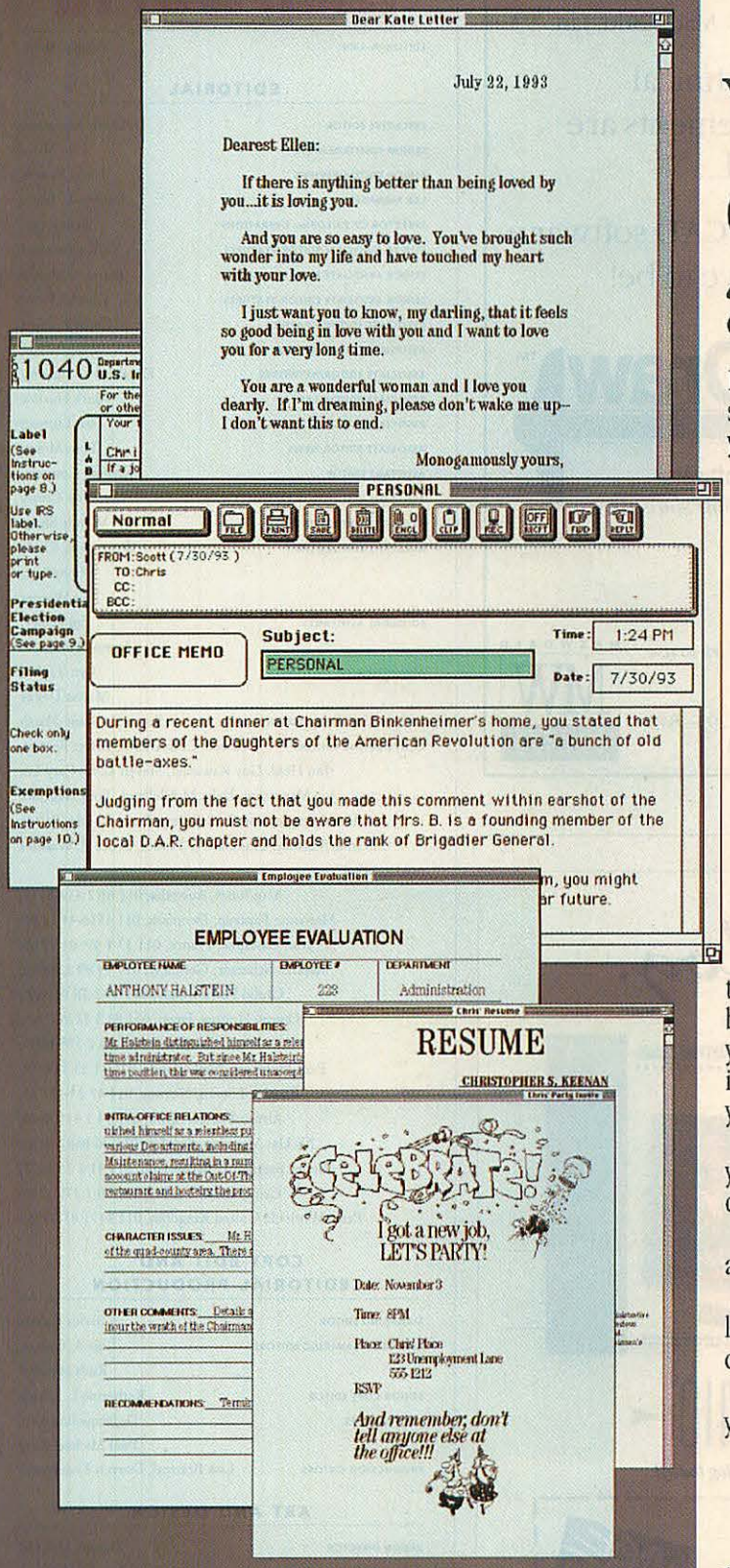

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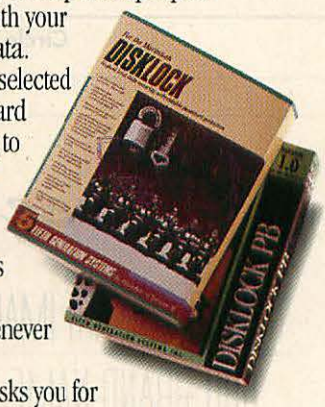

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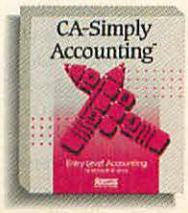

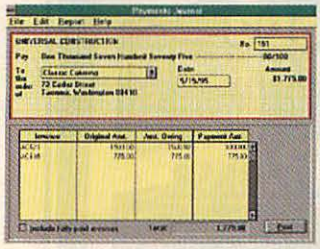

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Type	Purchase Date	#	Purch Price	Comm /Buy	Cost	Sell Date	Sell Price	Comm /Sell	Today's Value	P/L
Calls	12/29/89	10	$4.13	$111.13	$4,236.13	01/03/90	$8.25	$123.50	$8,126.50	$3,890.38
Puts	01/09/90	15	$5.50	$123.50	$8,373.50	01/15/90	$13.00	$157.25	$19,342.75	$10,969.25
Puts	01/16/90	20	$8.75	$151.25	$17,651.25	01/24/90	$14.88	$188.00	$29,562.00	$11,910.75
Puts	02/21/90	70	$4.25	$186.00	$29,936.00	02/26/90	$2.94	$160.44	$20,402.06	($9,533.94)
Calls	03/16/90	30	$6.63	$158.38	$20,033.38	03/20/90	$10.00	$188.75	$29,811.25	$9,777.88
Calls	04/12/90	50	$5.50	$181.25	$27,681.25	04/16/90	$8.25	$222.50	$41,027.50	$13,346.25
Puts	04/19/90	80	$5.00	$218.75	$40,218.75	04/27/90	$10.00	$338.75	$79,661.25	$39,442.50
Calls	05/08/90	170	$4.75	$341.00	$81,091.00	05/14/90	$19.25	$1,080.50	$326,169.50	$245,078.50
Calls	06/22/90	475	$6.63	$1,042.81	$315,730.31	06/25/90	$3.63	$615.31	$171,572.19	($144,158.13)
Puts	08/07/90	225	$7.88	$630.31	$177,817.81	08/24/90	$22.25	$1,600.63	$499,024.38	$321,206.56
Calls	01/17/91	300	$12.88	$1,287.50	$387,507.50	01/18/91	$19.00	$1,808.75	$568,191.25	$180,683.75
Calls	01/21/91	500	$10.63	$1,692.50	$532,942.50	02/13/91	$32.00	$4,898.75	$1,595,101.25	$1,062,158.75
Calls	04/16/91	500	$3.13	$567.50	$156,817.50	04/18/91	$9.50	$1,523.75	$473,476.25	$316,658.75
Puts	04/22/91	500	$5.38	$905.00	$269,655.00	04/26/91	$7.00	$1,148.75	$348,851.25	$79,196.25
Puts	05/02/91	500	$5.25	$886.25	$263,386.25	05/15/91	$11.50	$1,823.75	$573,176.25	$309,790.00
Calls	06/27/91	500	$4.00	$698.75	$200,698.75	06/28/91	$3.63	$642.50	$180,607.50	($20,091.25)
Puts	07/05/91	500	$4.75	$811.25	$238,311.25	07/10/91	$3.38	$605.00	$168,145.00	($70,166.25)
Calls	07/18/91	500	$1.38	$305.00	$69,055.00	07/19/91	$2.75	$811.25	$136,988.75	$67,933.75
Puts	09/04/91	500	$4.63	$792.50	$232,042.50	09/11/91	$7.50	$1,223.75	$373,776.25	$141,733.75
Puts	09/26/91	500	$3.00	$548.75	$150,548.75	10/04/91	$5.25	$886.25	$261,613.75	$111,065.00
Puts	10/07/91	500	$3.00	$548.75	$150,548.75	10/10/91	$4.00	$698.75	$199,301.25	$48,752.50
Calls	12/30/91	500	$4.13	$717.50	$206,967.50	12/31/91	$9.88	$1,580.00	$492,170.00	$285,202.50
Calls	02/05/92	500	$3.38	$605.00	$169,355.00	02/05/92	$3.00	$548.75	$149,451.25	($19,903.75)
Puts	02/27/92	500	$4.50	$773.75	$225,773.75	03/11/92	$8.38	$1,355.00	$417,395.00	$191,621.25
Puts	03/30/92	500	$5.00	$848.75	$250,848.75	04/02/92	$7.13	$1,167.50	$355,082.50	$104,233.75
Calls	05/04/92	500	$3.13	$567.50	$156,817.50	05/06/92	$4.75	$811.25	$236,688.75	$79,871.25
Puts	08/06/92	500	$3.88	$680.00	$194,430.00	08/21/92	$10.13	$1,617.50	$504,632.50	$310,202.50
Puts	08/24/92	500	$4.50	$773.75	$225,773.75	08/26/92	$2.25	$436.25	$112,063.75	($113,710.00)
Calls	09/03/92	500	$5.50	$923.75	$275,923.75	09/14/92	$9.63	$1,542.50	$479,797.50	$203,783.75
Puts	09/25/92	500	$3.63	$642.50	$181,892.50	10/05/92	$20.00	$3,098.75	$996,901.25	$815,008.75
Puts	11/03/92	500	$4.63	$792.50	$232,042.50	11/11/92	$5.88	$980.00	$292,770.00	$60,727.50
Calls	11/30/92	500	$4.63	$792.50	$232,042.50	12/18/92	$7.00	$1,148.75	$348,851.25	$116,808.75
Puts	12/28/92	500	$5.00	$848.75	$250,848.75	01/12/93	$10.13	$1,617.50	$504,632.50	$253,783.75
Calls	01/26/93	500	$4.25	$886.25	$263,386.25	02/09/93	$6.38	$1,055.00	$317,695.00	$54,308.75
Puts	04/23/93	500	$4.63	$792.50	$232,042.50	04/27/93	$5.00	$848.75	$249,151.25	$17,108.75
Calls	06/11/93	500	$4.25	$736.25	$213,236.25	06/15/93	$3.75	$661.25	$186,838.75	($26,397.50)
Calls	07/09/93	500	$4.88	$830.00	$244,580.00	07/14/93	$7.63	$1,242.50	$380,007.50	$135,427.50
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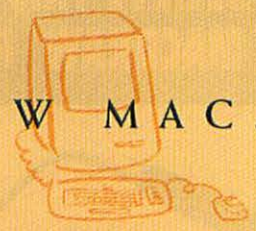

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- Generic design.
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- No awards.

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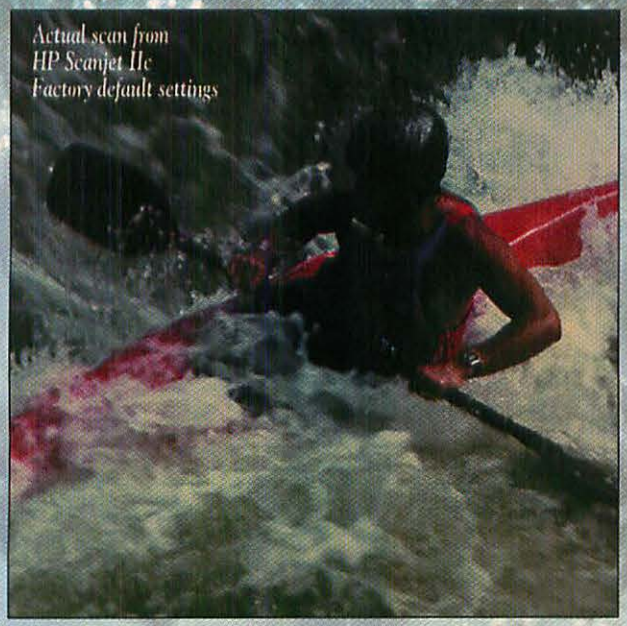

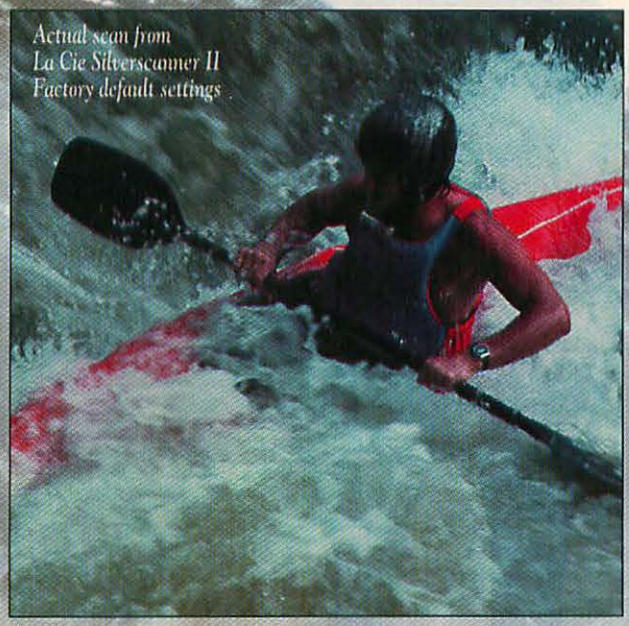

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MacWeek, May 1993

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Macworld, November 1993

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Circle 52 on reader service card

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BY ADRIAN MELLO

Grading the New Macs

The latest desktop lineup scores well

THE GOOD NEWS IS, WITH Apple's latest product introductions, Macintosh prices are now so reasonable that it doesn't make sense to wait any longer to buy a Mac. It's been a difficult year for Apple, but that's good for users: the company has now closed the price/performance gap with inexpensive Windows clones. We haven't had a chance to completely benchmark the new low-cost Mac models with the 68LC040 processor against competing 486SX machines, but early testing indicates that these Macs may actually be faster. If so, low-cost Macs are for the first time actually a better price/performance bargain than low-cost Windows machines, while still offering the unique Macintosh virtues. (See "New 040 Macs" in this issue for pricing and more details.)

The bad news is that for the last year or so, Macintosh models and prices have changed so often that users' heads are spinning. This month, Apple is introducing more models and is repricing, renaming, and upgrading many others. All these changes make it hard to figure out which Mac to buy, so here's a quick guide to help you through the maze. Please note that the grades are not intended as definitive overall ratings but as quick takes. Thorough reviews will have to wait until we can get our hands on shipping units. There's one more caveat: when Apple introduces the new machines, it is also expected to announce a fire sale of overstocked older Macs, a price drop that might improve their relative price/performance.

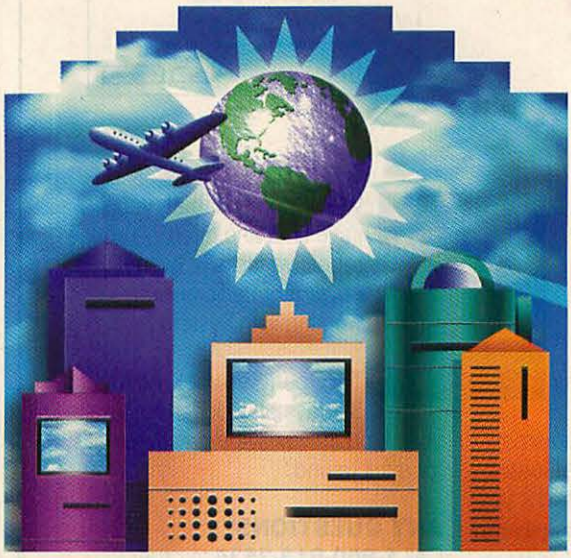
Apple has simplified its product lines and renamed some Macs to suit their distribution channels. Performas are still sold by mass merchandisers; LCs, through education channels; and Quadras and PowerBooks, by computer dealers. Unfortunately, this may be more confusing to users who buy through more than one channel, because some Macs are sold under different names in different channels and some are sold only in specific channels. However, once you know there are only six or seven basic machines worth considering, it's a lot easier to know which to buy.

GLENN MITSUI/STUDIO MD

LC II, III, and "IV"

The LC line has grown so that there are now many model names on the front of the perennial pizza-box Mac, but the choice is really quite simple. Most economy buyers should move directly to what, for convenience, I call the "LC IV," which is essentially the same machine with one of four labels depending on where you buy it: the LC 475, the Quadra 605, and the Performa 475 and 476. The LC IV represents the best bang for the buck if your computing needs are relatively simple and you don't need Ethernet, a built-in FPU, or a built-in CD-ROM. These models are the best value for most consumers and educators and for basic business applications. I give them an A.

Don't buy an LC II or a Performa 410. We are now two generations beyond these models. They may be a little less expensive, but they're a lot slower than newer low-cost Macs. I have to give them an F.



It wasn't long ago that the LC III was the best Mac bargain. Seven months ago I gave it an A, but it has now dropped to a C+ when compared with the LC IV models. The LC III and the Performa 466/467 (which are essentially the same, but the Performas are a little faster and have larger hard drives) are reasonably good machines. But they are not the best value, unless you are on a tight budget and you get one for a good 35 to 40 percent less than an LC IV.

The Color Classic

Don't bother with the Classic or Color Classic. They are no longer much of a value. I give them both Ds or Fs. The Color Classic II would have been great for those who love the classic Mac cabinet or need to save desk space, but Apple decided not to sell it in this country. I would give it a B if you could buy one.

The Performa 550 and LC 520

These are basically two versions of the same color machine, but the Performa 550 has a bigger hard drive and is slightly faster. In some ways these are hybrids of the LC series and the Classic series: all-in-one machines with a high-quality monitor and built-in CD-ROM drive for users who like the simplicity of plug-and-play computing. As an alternative, you could buy a Quadra 605, add a good-quality monitor and an external CD-ROM, and it would be a faster machine. It would cost about the same, but have a smaller hard drive and slightly less RAM and VRAM. It comes down to which packaging arrangement you prefer and whether you want to play CD-ROMs in 16-bit color out of the box. In any case, these are good machines. The Performa 550 and the LC 520 both get a B.

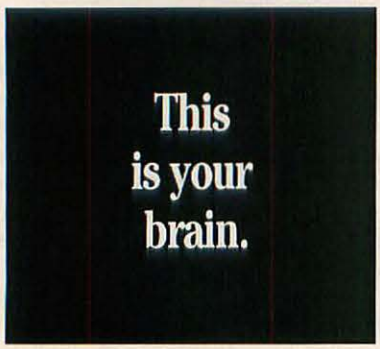
The Quadra 610 and 650

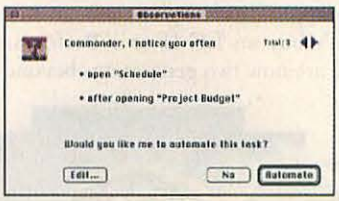
These two former Centris models have been upgraded in performance and value and renamed as Quadras. They are the best deals going for most business users. Both now cost about half as much as when introduced eight months ago as the Centris 610 and 650. Only seven months ago, the Quadra 610's price position looked dubious when compared with the less expensive LC III, but Apple now has

continues

sensible and competitive price positions for all Quadra models. The Quadra 610 is a better deal than the Quadra 605 for anything other than the most basic use because it comes with built-in Ethernet, more memory, and a larger hard drive. It also has an FPU in all but the base model. It would most likely cost you more than the $400 estimated price difference to add these items to a Quadra 605, and it would still be slightly slower. The Quadra 610 can accept an optional internal CD-ROM drive, but that drive comes with more heavily outfitted configurations that cost about 30 percent more than the base models. The most sensible machine for business applications that don't need lots of expansion, the Quadra 610 gets an A.

The Quadra 650 offers more expansion than the 610, but will most likely be priced about 40 percent higher than the base 610 (with neither machine including a monitor or keyboard). The 650 is well suited for medium-size and large businesses that intend to get a lot of years out of their equipment. The 650 can hold three standard-size NuBus cards, has a bigger hard drive, and is slightly faster than the 610. The 650's expandability is also good if you can't quite afford the top-of-the-line power of the Quadra 840AV but need the extra room for cards and storage required by publishing or other production-oriented applications. I give the Quadra 650 an A for being the best overall business workhorse.





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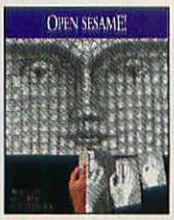

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The Quadra 660AV and 840AV

The AV Macs lay the groundwork for interesting new applications—including voice and data telephony, video, and presentations. They continue the Mac tradition of making vanguard technology accessible to mainstream users. You can expect to pay a little more, but they are good values if you want those technologies. The Quadra 660AV is good for people more interested in being users than multimedia authors, who might need more expansion. You might use a 660AV to combine faxing with voice communications and E-mail, or to record on videotape a presentation you've created. The Quadra 840AV has more room for peripherals and cards, and it is the fastest Mac available. The 840AV is well suited for multimedia authoring, and it's the best choice for demanding production applications, such as color prepress and publishing, where more processing horsepower quickly pays for itself. The AV Macs cost more, so they're not for everyone, but for the above-mentioned applications they are good choices. I give the Quadra 660AV a B– and the Quadra 840AV a B+.

The Quadra 950

The Quadra 950 is still the only Mac if you need to accommodate a disk array or you need lots of slots. This old warhorse needs a heart transplant; it gets a C– simply because it is the only machine for heavy hauling. I wouldn't be surprised if Apple upgraded or discontinued it.

Now's the Time

Put simply, if you are in the market for a Mac, now is a very good time to buy. Prices have fallen in line with PC prices, and Apple has an excellent assortment to choose from. I don't anticipate the kind of precipitous price cuts we've seen over the last year as Apple played catch-up with Windows PCs. Of course, as newer models age or fail to demonstrate proven demand, you can expect Apple to cut prices in the same way any vendor would. Now that I've covered desktop models, next month I will look at how to choose among the new PowerBooks. **m**

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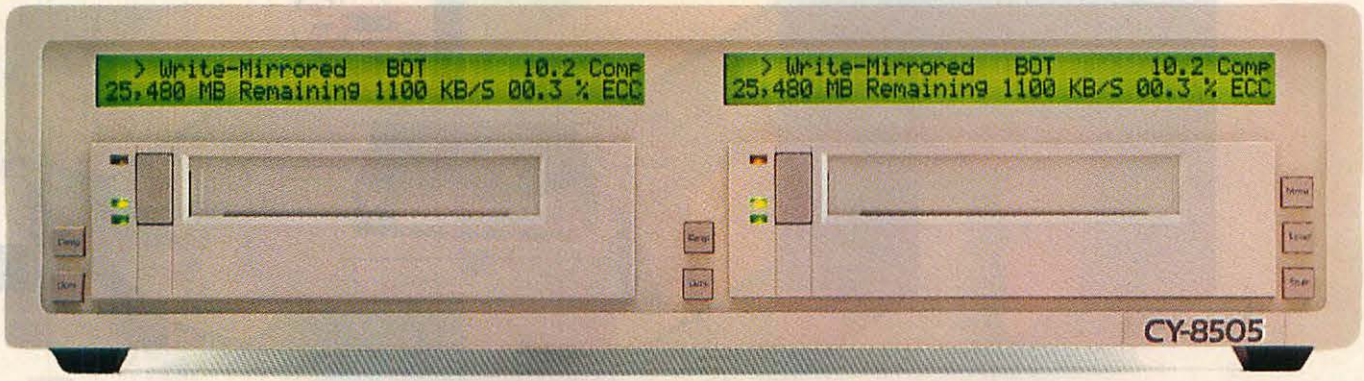

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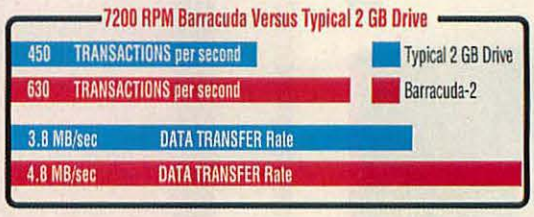

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Circle 139 on reader service card

Letters

Brave New Macworld

CONGRATULATIONS ON THE MUCH improved format. I especially like that your reviews are separated by advertisements. Now I will be able to tear apart old issues and file the reviews by category without having the last page of a review on the reverse side of the first page of another review.

John Williams
Front Royal, Virginia

I MUCH PREFERRED THE STYLE USED from February '92 to August '93. The bold serif capitals in the title gave *Macworld* a solid look. The contents page is painfully dull now, but can't you keep the reviews in the back? And ditch the yellow stars. Red stars, please.

Ivor Tossel
via America Online

ALTHOUGH I WAS PLEASANTLY surprised by the "bold new logo," as Adrian Mello put it (*State of the Mac*, September 1993), the thing I loved the most about the former incarnation of *Macworld* was that the main feature section was ad-free. Gone are those days. Now the ads are at every corner.

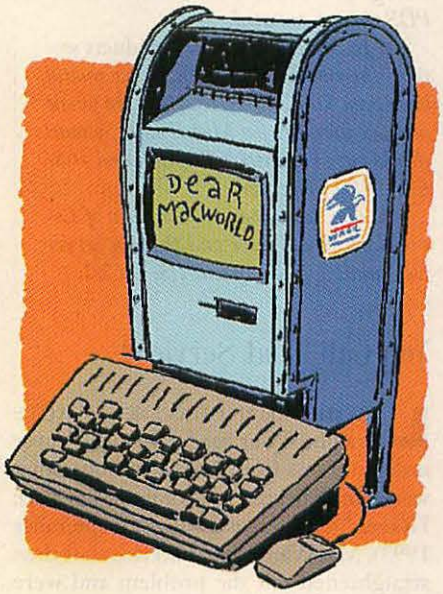
John Gilbert
Austin, Texas

THE NEW LOGO SCARES ME. I HATE it! The typeface is more appropriate for *Obedient Unix User* than *Macworld*.

Chris Adamson
via America Online

I WANT TO SAY HOW MUCH I ENJOYED your layout and content changes. The magazine now has a clean and inviting look, but it is not for lack of a substantial amount of news, information, opinion, and yes, even hype.

I did not have to ask who was doing all the usual work to which you could not attend while you recast your magazine. Did you count how many times the name



WARD SCHUMAKER

Charles Seiter appeared as a byline to a review or substantial piece? I think it must be a record.

Wayland Y. Brown
Savannah, Georgia

Supersonic Storage Error

I AM WRITING TO EXPRESS FWB'S concern and dismay over the test results of our SledgeHammer2000FMF RAID Array ("Supersonic Storage," page 109, August 1993). The chart "When Do Arrays Pay Off?" erroneously states that the FWB array's performance is below that of other products tested. Additionally, the article implies that our product is a poor value for customers. Nothing could be further from the truth.

FWB Engineering's assessment indicated that Macworld Lab configured the SledgeHammer array for mirroring (RAID Level 1) rather than for striping (RAID Level 0). This would explain *Macworld's* results, since mirroring offers redundant fault tolerance, while striping offers high data-transfer rates. The numbers that were published are consistent with the level of performance the SledgeHammer array delivers when configured for mirroring.

No one likes to be rated poorly, especially when our product has been independently tested and proven to perform as well as or better than our competitors'.

Steve Goodman
Vice President, Sales
FWB
San Francisco, California

The FWB SledgeHammer2000FMF disk array was incorrectly depicted as slower than competitive products. The FWB array should have been credited with sustained data-transfer rates of about 5MB per second, equal to that of the fastest arrays Macworld Lab tested. We regret the error.—Ed.

My Boss Made Me Do It

I READ DEBORAH BRANSCUM'S SEPtember column (*Conspicuous Consumer*) subtitled, "How managers can stop software theft." As a buyer of software and sometimes as a producer of copyrighted work, I follow the rules of copyright law. But as a worker in a government directorate, I cannot stop illegal software proliferation unless my manager understands what is going on—he's the boss and my job depends on his will.

I have seen many things while working here. For instance, I have seen my boss buy software and install it on (at least) four machines, at work and at home. I've seen him use an upgrade offer and install the upgrade on many machines (at work and at home!). He treats other copyrighted materials, such as educational videotapes, similarly. He is the boss, you know. If you want to write about how managers can stop software theft, the first thing you must do is educate them about what a copyright is, what it has to do with software, and what constitutes an illegal act with software. I tried with my manager, but it didn't work.

Name and Address Withheld by Request

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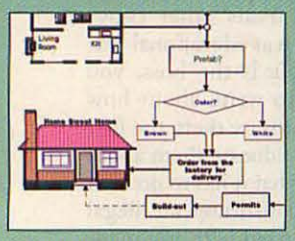

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CORRECTIONS

- *The Quadra 800 requires 60ns RAM SIMMs, not 70ns, as we stated in our October 1993 feature "The AV Macs."*
- *Quarterly updates for AccuZip6 are $200 per year, not per quarter ("Shrinking Your Postage Costs," At Work news, September).*
- *In the "Outfitting a Mac for Fast SCSI" sidebar ("Supersonic Storage," August 1993), we tested the NuBus version of Storage Dimensions' Data Cannon, not the PDS version as stated.*
- *In September's* New Products *section, the number for Cliffs Notes should have been 800/228-4078. Also, the phone and fax numbers for MicroTouch Systems should have been 508/659-9000 and 508/659-9100, respectively.*
- *The September 1993 review of Lotus Notes should have said that the server was running OS/2 system 1.3, not 2.1.*

You Call That Service?

LET ME SEE IF I HAVE THE FACTS straight. Your reader Elaine Truver ordered items from MacWarehouse that were not delivered as promised ("Service Heroes," *Conspicuous Consumer*, September 1993). MacWarehouse's service staff then straightened out the problem and were nominated as Service Heroes.

I've had similar problems with MacWarehouse. I have never received items "the next day" as promised. There's always a problem: they can't find my order, the item is out of stock. Oh sure, their customer-service staff eventually figures out where the order is and solves the problem, but I wouldn't call them service heroes for that. By the time I have to call to find out where an order is, it is too late. I shop elsewhere.

Bob Kozlowski
Concord, Massachusetts

Net Where?

WITH A GROAN OF FRUSTRATION, I have just put down the September 1993 issue. Jim Carr's article ("Connecting to NetWare") was well written and provided people who haven't made a commitment to NetWare for Macintosh with some reasonable alternatives. *But* . . . when are your writers going to acknowledge that Token Ring technology exists? I can't recall a single discussion of this subject in your magazine for the last two years. Every time you publish an article on networking technology, the discussion focuses on LocalTalk versus Ethernet, completely disregarding the fact that Token Ring provides a faster data-transfer rate, as well as better overall throughput, than Ethernet. Is there an editorial bias here?

Peter Connolly
San Francisco, California

Statistically Significant

I READ AND ENJOYED CHARLES Seiter's article "The Statistical Difference" in the October 1993 issue but am curious: why did he leave out MicroTSP? The review seemed to look only at programs from relatively large software publishers. MicroTSP, from QMS, is a great program for time-series analysis and has a true Macintosh interface.

William S. Brown
Juneau, Alaska

MicroTSP is indeed a great program, but to fit the article into the available space we had to cut most references to special-purpose programs from smaller vendors and focus on all-in-one packages.—Ed.

Do You See What I See?

BASED ON YOUR SEPTEMBER 1992 review of monitors ("The Bigger Picture"), I purchased an E-Machines T16 II over the NEC MultiSync 5FG and the Apple 16-inch monitors. In the Editors' Choice you said, "This monitor is excellent in almost all respects, particularly in brightness, contrast, sharpness, and overall color purity." Imagine my disappointment on reading "Expanding Your Horizons" in the October 1993 issue, where the E-Machines display was one of only two monitors described as "lackluster" in color saturation. You also said that the color balance was off, claiming "shallow reds, blacks."

I'm an artist just getting started with computers, and how a monitor handles color is important to me. I understand that each editor has personal preferences, but I don't understand how this big of a judging difference could be accounted for.

Baile Oakes
Westport, California

Our Editors' Choice boxes and graphics test-results sidebars can give you a quick feel for the top of the heap and the bottom of the barrel, plus hard data if you want to do your own interpretation. But there's no substitute for reading the body text of our test articles. For instance, you'll notice in the October feature that we say, "the majority of the monitors varied only slightly in quality," and, "you really can't

continues

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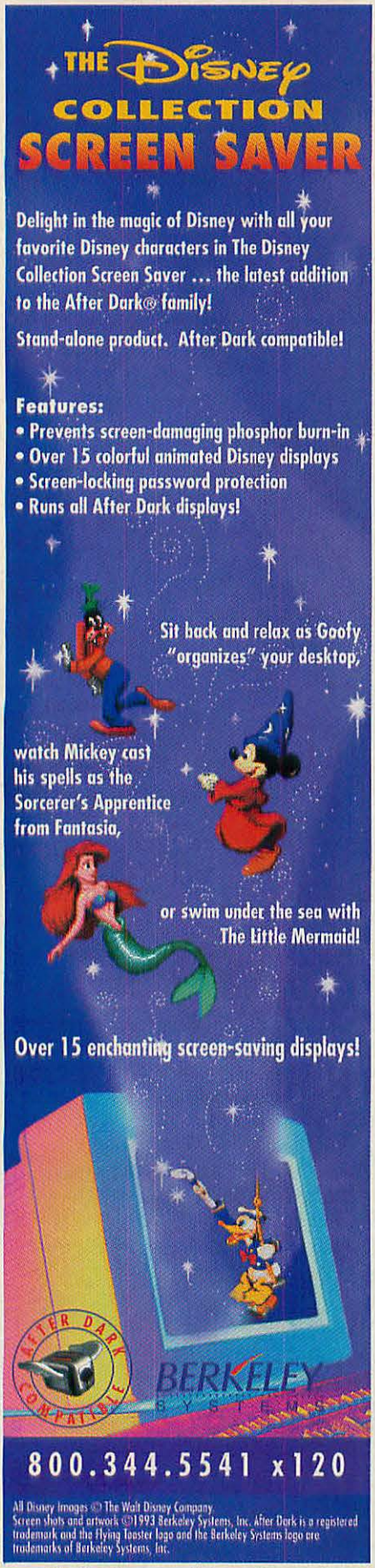

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go wrong with most of the monitors we tested." The quality differences that we pick out in our tests are often very small—nearly indistinguishable without instruments. At that level, we're reporting variations that are well within most companies' acceptable manufacturing tolerances.—Ed.

World Class (-y, -less)

IT WAS INDEED A PLEASANT SURPRISE to see that you finally revised your method for bestowing the World-Class Awards to enable the acknowledgment of ProVue Corporation's Panorama as the superior Macintosh database.

As an avid user since the early OverVue days, I'd like to add my voice to the apparent many who feel so passionately about Panorama. It serves as my address book, spreadsheet, appointment book, and dozens of other things. It's flexible enough to use for simple things and powerful enough to work with complex sets of files. And it's fast!

Glen Daum
Ridgewood, New Jersey

EVERY YEAR *MACWORLD*'S WORLD-Class Awards mean less and less to me. Now it seems that all a company has to do is hope that its users get more questionnaires than the other guy's. What does it mean that a greater percentage of Panorama users either (1) got the survey or (2) responded? If I were a new user, I might be tempted to go out and get Panorama, not knowing that FileMaker Pro is technically a much better product.

I own both programs and have for years. Panorama is faster in some ways than FileMaker, but its layout and reporting tools aren't even close to FileMaker's, Panorama wouldn't know an Apple event if one hit it on the head, and FileMaker is cross-platform, but Panorama wins the award?

Jeff Gagne
Packer Software
via America Online

But I Don't Want an External Drive

MATTHEW LEEDS'S RECOMmendation that PowerBook users "benefit more by adding an external drive," in the article "Real-Time Compression" (August 1993), missed the point of having a PowerBook. Compression software does not take extra space on an airliner tray or on one's lap in a car or terminal chair, nor does it significantly reduce battery run-time. Disk compression is the first software I bought for my PowerBook and I find it a necessity.

Robert Wilson
Huntsville, Alabama

Missing Macros

I WAS QUITE DISAPPOINTED TO FIND no mention of UserLand Frontier in Jim Heid's column on macros and scripting (*Getting Started*, August 1993). Much space was devoted to AppleScript, which has yet to be distributed commercially. Frontier has been on the market since 1991 and has a hard-core, loyal following. Additionally, Frontier scripts can trigger QuicKeys macros and vice versa, making it possible to use Frontier scripts in situations where Apple events are not fully supported. UserLand Frontier is a valuable tried-and-proven product for the advanced Macintosh user. It should have been given equal time with AppleScript.

Eugene Barnes
Lawrence, Kansas

OUR WORD PROCESSOR, NISUS, AND our text editor, QUED/M, have implemented macros since 1987 and 1989, respectively. Nisus users have always been able to record their macros and edit them after recording, or type them in and try them out one line at a time. Several publications, including *Macworld*, have repeatedly mentioned this, which is why it's puzzling that author Jim Heid failed to include either Nisus or QUED/M in his list of applications that "speak macro."

Mark Hurvitz
Documentation and Technical Support
Nisus Software
Solana Beach, California

August's *Getting Started* was intended as an introduction to macro and scripting concepts, not an overview of all macro-capable products. We singled out the programs mentioned because they're among the most popular in the Macintosh world. Nisus and Frontier are both capable programs, but they have a much smaller following than the software we mentioned.—Ed. ■

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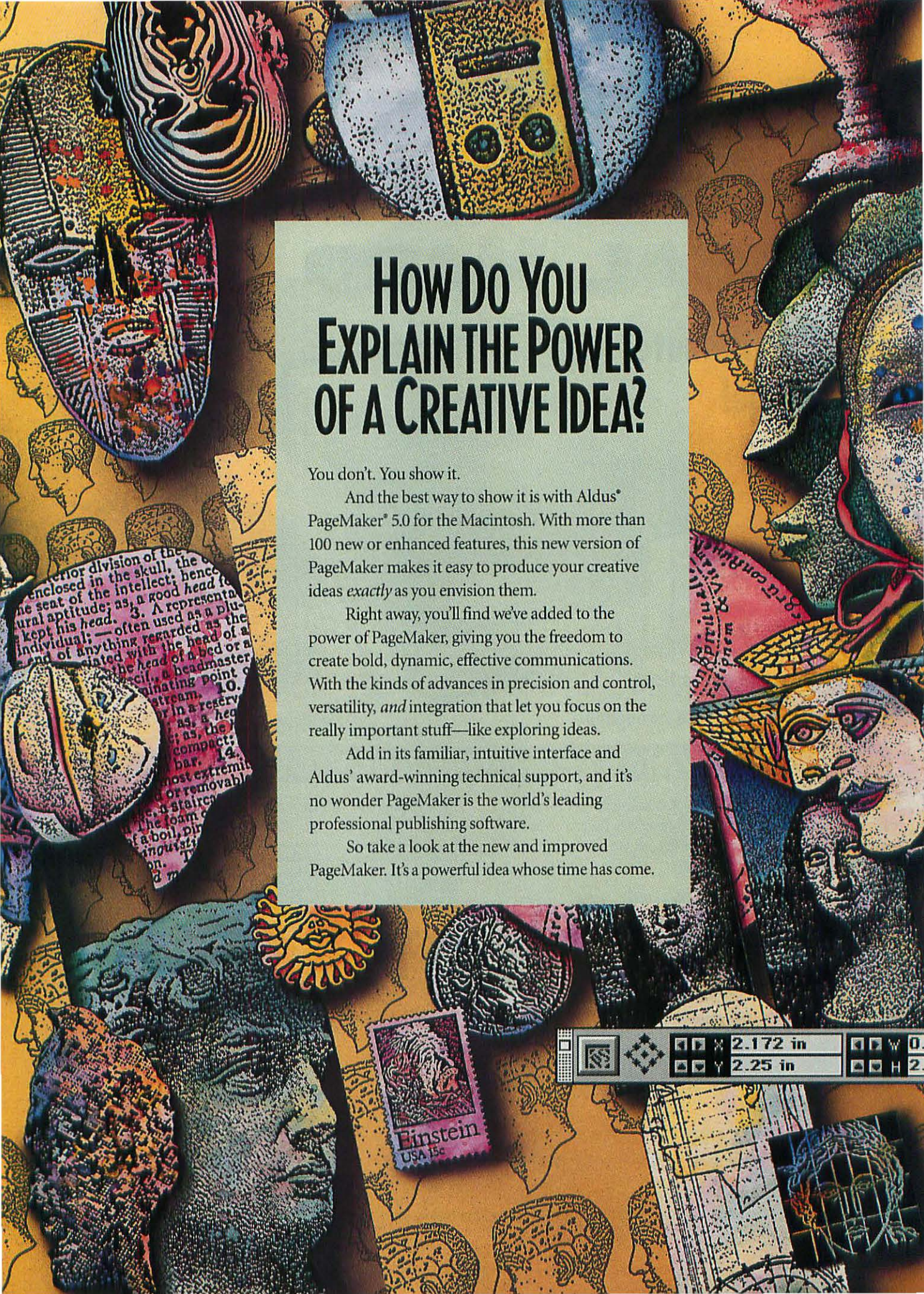

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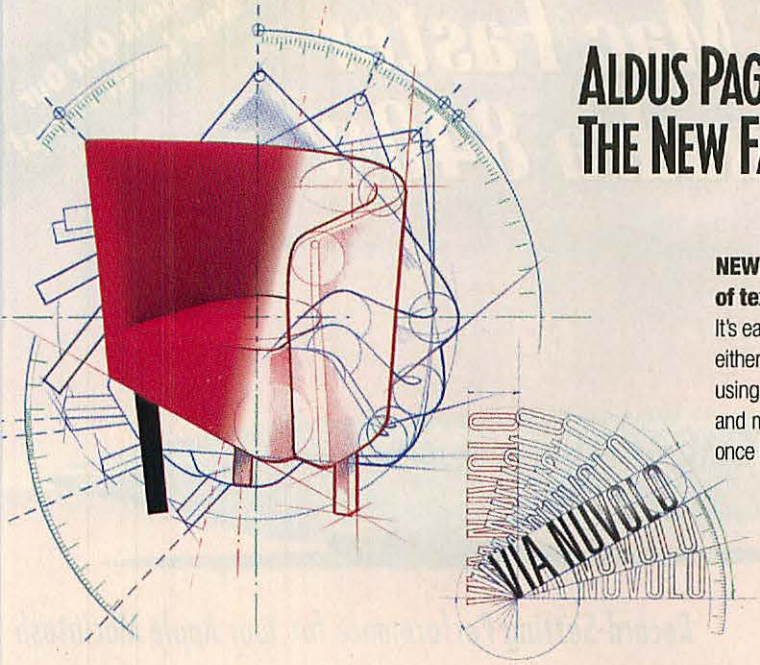

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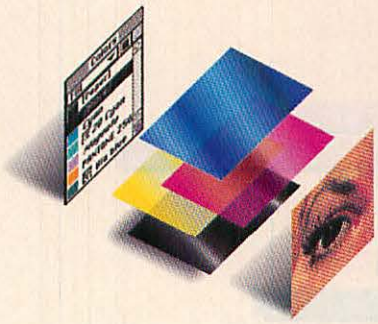

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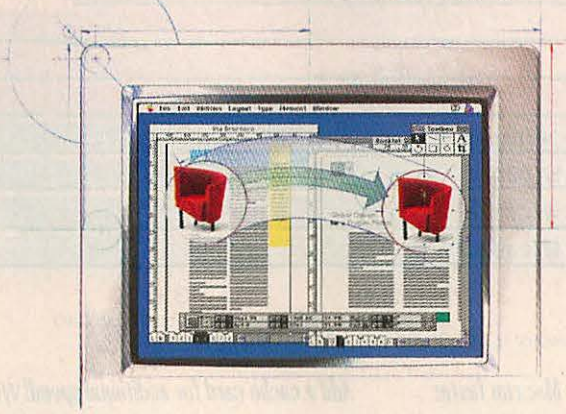

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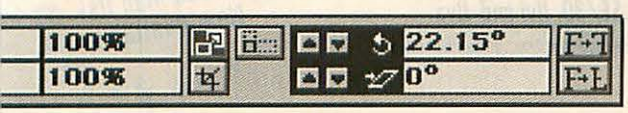

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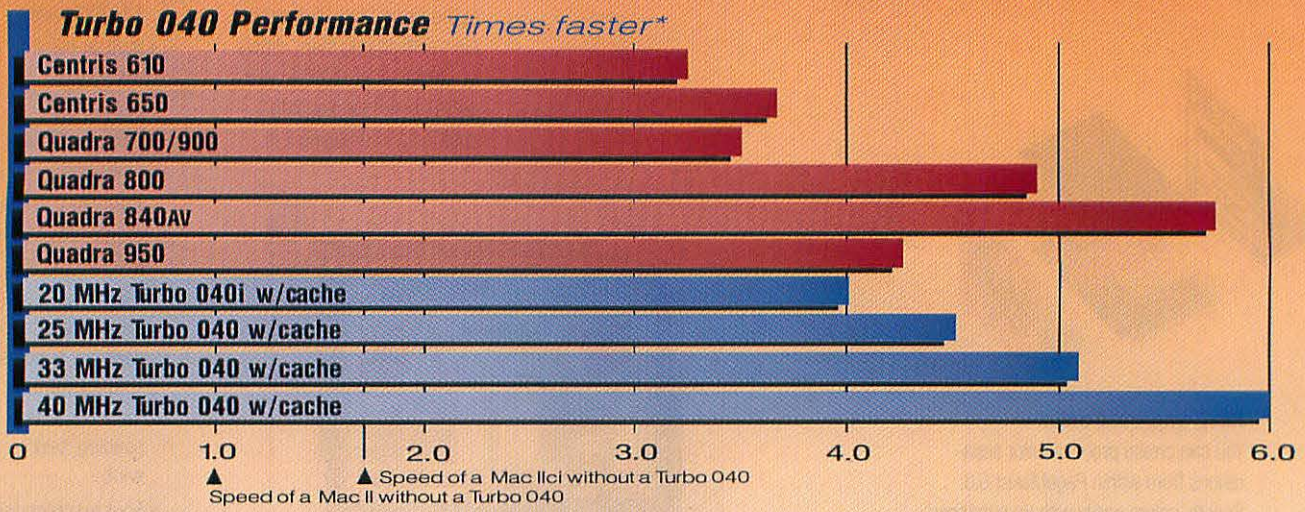

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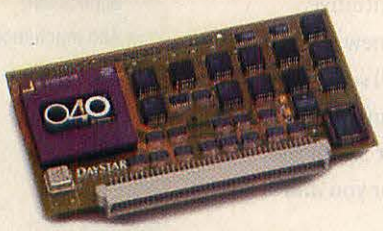

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LATE-BREAKING NEWS

MacBulletin

Was Sculley Forced Out? Apple chairman John Sculley did not resign as Apple's CEO—he was forced out by the board of directors, who believed the CEO focused too much on long-range strategies and not enough on day-to-day operations, according to a lawsuit filed by Albert A. Eisenstat, Apple's former executive vice president and secretary. Eisenstat's claims contradict previous statements from Apple and Sculley that Sculley voluntarily stepped aside as CEO. The suit against Apple and new CEO Michael Spindler alleges that Eisenstat's termination financial package was inadequate (his job was cut in last summer's restructuring). Apple said all of the lawsuit's allegations are "without merit."

Newton Update Apple, which says it sold 50,000 Newtons and 1500 copies of the Newton software-development kit during the palm-held digital assistant's first two months on the market, is offering a free upgrade to the Newton's operating system. Version 1.04 fixes display problems and has better power management. In the United States call 800/242-3374.

First Silicon for PowerPC 603 IBM and Motorola said they have made "first silicon" versions of the PowerPC 603, the second processor in the PowerPC line. The 603 chip is about as fast as the speedy PowerPC 601 but consumes only about 3 watts, making it ideal for portable computers, energy-saving desktop systems, or PowerPC accelerator boards that could speed up current Macs without exceeding their power budgets. Production volumes of the 603 are expected to begin shipping in the third quarter of 1994, but any computer designed around the chip would probably appear several months later.

Supra Buys PSI Integration Supra has purchased PSI Integration after Silicon Valley Bank foreclosed on PSI's secured assets. Supra plans to take advantage of PSI's wider PowerBook modem line and the company's international name-recognition. PSI modem owners will continue to receive support through the former PSI customer service line, 408/369-5700.

ChipSoft Acquired by Intuit In a twist on the current merger mania among software companies, Quicken publisher Intuit (415/322-0573) has announced plans to acquire MacInTax publisher ChipSoft (619/453-4446). ChipSoft obtained MacInTax by buying SoftView several years ago and was blocked by the Justice Department's antitrust division in a recent attempt to buy MECA, which publishes the competing tax-preparation program, TaxCut. Intuit's Quicken competes with MECA's other core product, Managing Your Money. If the deal is completed, the companies plan to maintain all operations in their current locations.

Color It and Give It Away Software developer Micro Frontier has decided to take a different approach to making its software a standard—the company says it plans to essentially give away as many as 1 million copies of its Color It paint and image-enhancement program. On October 1, the company began sending version 2.3 of the application to users who call 800/949-5555, charging $8.37 for shipping and handling. The promotion will end with the 1 millionth copy or on December 31, whichever comes first, and then Color It will revert to its $149.95 retail price.

Iomega Reduces Workforce Iomega has announced that it will cut roughly 100 workers from its current 1100-person roster, mostly in manufacturing, citing increased competition and lower margins following its September price cuts on Bernoulli products (see "Iomega Cuts Bernoulli Prices," November *MacBulletin*). The exact date of the layoffs had not been decided at press time, but it was expected to fall in mid-October. m

News

EDITED BY TOM MORAN

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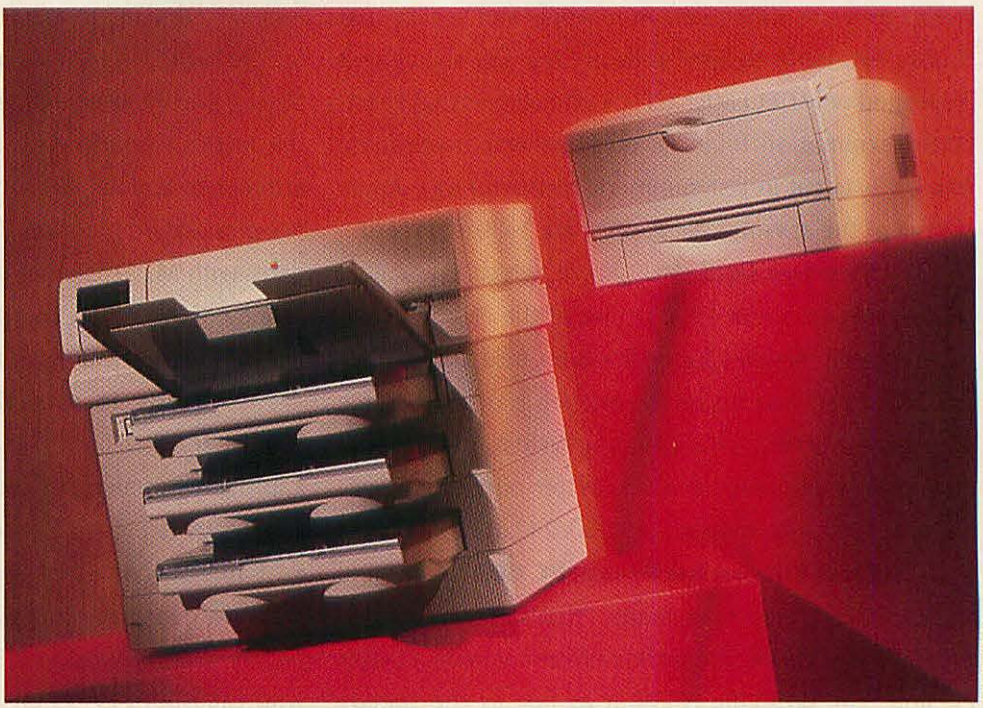
Apple Adds Workgroup Printers

MULTIPLATFORM WORKHORSES



ROBERT PERRY

Apple's latest: For large workgroups, the 20 ppm LaserWriter Pro 810 (front), and for smaller workgroups, the 10 ppm LaserWriter Select 360.

If you work in an office with networked laser printers, you probably think your printers aren't too fast, or too versatile. Because the printer market always has room for more speed, better networking, and improved media handling, Apple plans to introduce two new printers for workgroups in November: the big-workgroup LaserWriter Pro 810 and the small-workgroup LaserWriter Select 360. Both printers represent Apple's determined effort not just to be price competitive but also to put more Apple printers on mixed-platform networks.

The LaserWriter Pro 810 uses a 400-dpi print engine that can be driven to 800-dpi resolution by its controller. The 810 prints up to 20 letter-size pages per minute.

You can pick the 810 out of a crowd by the set of three paper cassettes on its side—the paper-handling facilities dwarf the actual printer mechanism. The 810 can take letter, legal, tabloid, A3, A4, A5, B4, and B5 paper sizes. Optional paper cassettes can handle executive and folio sizes. As you would expect, the 810 also prints envelopes, labels, and transparencies.

All this high-resolution, large-format flexibility is accessible from practically any application on any computer on the network. The 810 has LocalTalk, Ethernet, and standard serial ports; and it supports not just PostScript Level 2, familiar to Macintosh users, but also the PCL 4+ page-description language found on Hewlett-Packard printers in the MS-DOS world. Network protocols standard on this printer include Novell's NetWare IPX, Digital Equipment's LAT, TCP/IP, and EtherTalk. The printer's software lets network administrators manage the printer and diagnose problems from any computer on the net.

The LaserWriter Pro 810 ships with 64 TrueType fonts from 15 standard families, 35 PostScript Type 1 fonts, and 33 fonts for PCL 4+. Apple suggests a retail price between $4600 and $5000; buyers who need high-resolution printing in large formats can expect to pay a higher price for extra memory (8MB is standard,

16MB for 800-dpi tabloid-size printing). Dataproducts, which actually manufactures the printer, currently sells the equivalent model LZR 2080 for $5495, and Varityper resells the same system, as the VT 820, for the same price. An optional PostScript-based send/receive fax modem will be offered for $300 to $400.

The LaserWriter Select 360, for a mere $1500 to $1700, offers a similar set of benefits to workgroups that don't need a vast range of paper sizes or complex networking capabilities. The 360 prints 10 pages per minute at 600 dpi—this combination of resolution and speed is made possible by a 16MHz AMD 29200 RISC processor. The 360 includes PostScript Level 2 and PCL 5 emulation to accommodate both Mac and Windows users, features Apple's typical 15 families of TrueType fonts, and contains TrueType and Type 1 support in ROM (which improves speed and hinting, according to Apple). The 360 has LocalTalk and serial ports, plus a parallel port—seldom seen on Apple products. It switches ports and emulation modes automatically. The 360 handles one paper tray at a time and comes with a 250-page letter-size paper tray and a 50-page multipurpose tray. The 360 also accepts the new PostScript fax card offered for the 810.—CHARLES SEITER

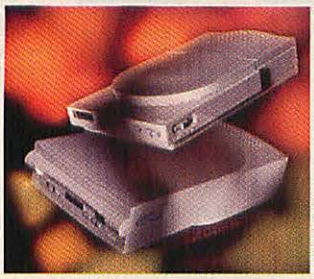
NEC Triples the Ante on CD-ROM Speed

450-KBPS TRANSFER RATE

Just bought a double-speed CD-ROM drive? If so, don't gloat too long: the first triple-speed drives are making their way to a store near you—for about the same amount of money you paid for your double-speed drive.

NEC recently announced that new models of its MultiSpin CD-ROM drives deliver data-transfer rates of 450 KBps, compared with the 300-KBps speed of its current MultiSpin models. The faster data-transfer rate means improved graphics performance—smoother QuickTime video, for instance.

But in some cases, CD-ROM software must be optimized to take advantage of the increased data-transfer rate. NEC said developers such as Macromedia, The Voyager Company, and Warner New Media are updating current products, and introducing new ones, that will take advantage of the triple-speed data-transfer rates. No product announcements were made at press time, however.



TOM GIBSON

NEC's MultiSpin 3Xp (top) and 3Xe CD-ROM drives offer data-transfer rates of 450 KBps.

NEC has three triple-speed MultiSpin drives: the 3Xe ($600), an external model; the 3Xi ($500), an internal device; and the 3Xp ($455), a portable unit. The 3Xe and 3Xi offer access times of 195ms; the 3Xp's access time is a slower 250ms. All three drives are SCSI 2 devices and have a 256K data cache. A $35 interface kit is required to connect any MultiSpin CD-ROM drive to a Mac.

NEC said it will offer an upgrade deal in which current MultiSpin owners can return their CD-ROM drives to NEC in exchange for a reduced price on a triple-speed model. No further details of the upgrade offer were available at press time. All three of the new drives were scheduled to ship in mid-October. NEC, 708/860-9500.—JAMES A. MARTIN

Hard Drive in the Box

YOU ADD THE DRIVE

Maybe you've got a 2½-inch, low-capacity SCSI drive hanging around from a PowerBook you've upgraded, and maybe you've got an extra NuBus slot in your desktop Macintosh. Just by coincidence, the ETC Peripherals Purple Bullet board plugs into the NuBus slot and can hold a 2½-inch, low-profile SCSI drive. The board draws power for the drive from the NuBus, and the company supplies a pass-through SCSI ribbon cable that plugs into your Mac's internal SCSI port. The board fits into any Mac with a NuBus port, as well as the IIsi and Centris 610 with Apple's adapter. With the $15 Purple Bullet Expander, users can mount two drives, one of which can be a 3½-inch, low-profile drive. The product ships with ETC Disk Tools formatting and partitioning software. Shipping now for $99. ETC Peripherals, 813/884-2863.

—CAMERON CROTTY

PAUL BERG

The ETC Peripherals Purple Bullet board accepts a 3½-inch hard drive and fits in a NuBus slot.

Extend AV Quadra RAM

256MB MORE

With its PowerExtend Memory Expansion Card, Newer Technology comes to the rescue of Quadra 840AV users who feel

continues

In Brief

Japanese Color Classic

Apple has introduced the Color Classic II, which is identical to the Color Classic with two exceptions—the CPU is a faster 33MHz 68030, and the data bus is a full 32 bits wide. The performance improvements are enticing, but the only place you can get the new model is in Japan. At press time, Apple USA said it has no plans to carry it.

Quantum High-Capacity Drives

Quantum Corporation, maker of a lot of the hard disks sold under other brand names, has unveiled two new lines of high-capacity disk drives. The Quantum Empire 540 line of five 3½-inch drives ranges from 127MB to 540MB capacity.

In addition, there's a two-disk system called the Quantum Empire 1080, with 1.08GB capacity. The four disk drives in the Go Drive GLS line, 2½-inch drives designed for portable computers, range from 85MB to 256MB. These drives will replace previous Quantum models.

Pumped-Up RAM

TechWorks has begun shipping new chips for the memory hungry. The 10MB PowerRAM module for the PowerBook 165c or 180c lists for $799. A 16MB PowerRAM module for the Quadra 800 computer goes for $895. 512/794-8533.

Speedy CD-ROM

Chinon America is now shipping the CDA-535, a versatile CD-ROM drive that reads data at a rate of 300 Kbps and has a 256K cache to aid uninterrupted play of multimedia files. Its average seek time is 250ms. The CDA-535 handles CD-ROM, CD audio, and multisession Photo CD. It's CD-ROM/XA–compatible and, with a $99 PC SCSI adapter, it works with MPC and MPC/2. With cable, SCSI terminator, and CD caddy, the CDA-535 lists for $795. 310/533-0274.

How Fast Are the LaserWriter Select 360 and LaserWriter Pro 810?

Times are in seconds. Shorter bars are better. In both categories, products are listed in decreasing order of overall performance.

	Multiple Fonts Speed for a typical 7-page Microsoft Word 5.0 document with a variety of fonts, sizes, and styles.	Courier Speed for a 20-page Word 5.0 document with double-space 12-point Courier text in plain, bold, and italic.	MacDraw Pro Speed for a complex drawing with few special effects, but with over 2000 simple objects and several lines of Helvetica text.	FreeHand 3.1 Speed for a complex graphic with special PostScript effects. Our illustration included nonlinear blends and Bézier curves.	PageMaker 5.0 Speed for a 4-page newsletter containing several fonts, a MacPaint image, and 3 gray-scale TIFF images.	TrueType Speed for a 1-page Word 5.0 document containing 4 TrueType fonts.
Tested at 600 dpi						
Apple LaserWriter Select 360* *(FP)*	113	141	89	327	93	54
Apple LaserWriter Pro 600 *(FP, PG)*	154	164	125	501	124	62
Hewlett-Packard LaserJet 4M**	191	163	111	488	136	77
Tested at 400 dpi						
Compaq PageMarq 20	59	85	81	236	60	55
Apple LaserWriter Pro 810*	133	88	104	480	86	97

*Preproduction unit. **Optional Resolution Enhancement Technology (RET) off. FP = Optional Fine Print at 300 dpi; PG = Optional PhotoGrade at 300 dpi. All printers were tested on a Centris 650 with System 7.1, 8MB of RAM, with a Quantum LPS230 hard drive, and with AppleTalk on and background printing off. The Compaq PageMarq 20 also supports 300 dpi and 800 by 400 dpi. The Apple LaserWriter Pro 810 also supports 600 and 800 dpi with optional smoothing.

cramped when limited to a mere 128MB of RAM.

Now shipping, the PowerExtend holds up to eight 4MB, 8MB, 16MB, or 32MB 72-pin SIMMs, for as much as 256MB of additional RAM. For people such as desktop videographers, animators, graphic artists, and others who regularly work with gargantuan files, using a PowerExtend card in each of the 840AV's three NuBus slots allows for a grand system total of up to 896MB of RAM.

The card's flexible memory configuration lets users mix small and large SIMMs on the same card. Also, because PowerExtend accepts slower, 80ns RAM, users can reserve the pricier 60ns RAM for the 840AV's motherboard.

Although PowerExtend works with all NuBus-equipped Macs, the maker recommends it for the newer, fast-NuBus Quadra 840AV because PowerExtend's performance isn't quite as fast on the Quadra 900 and 950. Newer also planned to ship a version of PowerExtend for the 040 PDS in late September; this version is recommended for older models, such as the Quadra 700 and 800 and the Centris 650.

Newer Technology offers PowerExtend with or without RAM installed; the card alone costs $370. Because RAM prices were volatile at press time, you must call to get the most recent prices of boards with RAM. (The company also sells 72-pin 32MB SIMMs.) Newer Technology, 316/685-4904.

—SUZANNE COURTEAU

THE AMCOEX INDEX OF USED MAC PRICES

Machine/RAM/Hard Drive	Average Sale Price	Monthly Change
Mac SE/2MB/20MB	$500	$0
Mac Portable/1MB/40MB	$675	–$25
PowerBook 100/4MB/40MB	$850	$0
PowerBook 140/4MB/40MB	$1200	–$75
Mac Classic/2MB/40MB	$550	$0
Mac SE/30/2MB/40MB	$825	+$50
Mac LC/2MB/40MB	$650	+$50
Mac II/4MB/40MB	$600	–$50
Mac IIsi/3MB/40MB	$900	–$50
Mac IIcx/4MB/80MB	$1000	–$100
Mac IIci/4MB/80MB	$1375	–$75
Mac IIfx/4MB/80MB	$1600	–$100
Apple 12-inch B&W display/board	$125	$0
Apple 13-inch RGB display/board	$350	$0
LaserWriter Plus	$550	–$25
LaserWriter IINT	$875	+$50

Index provided by the American Computer Exchange of Atlanta, Georgia (800/786-0717). It reflects sales during week of September 20. Configurations include keyboard and exclude monitor and display board for noncompact models.

Add a PowerPC to Your Mac

THE POWERPC INFLUENCE

The other shoe has dropped. The first add-on board based on the PowerPC 601 chip has been announced—DayStar Digital plans to ship a coprocessor using the chip this fall. The as-yet-unnamed PDS board is the first in a series of DayStar products to take advantage of a technology called nPower, a method of distributed coprocessing developed by DayStar with cooperation from Apple.

The nPower coprocessor board, which should cost under $2000, is designed to work with the Quadra 700, 800, 900, and 950, as well as with the Centris 650. DayStar plans to introduce versions for the Centris 610 and LC family next year, along with a line of accelerators using the 601 PowerPC chip.

Publishing and rendering programs are among the applications most likely to be ready to take advantage of the PowerPC coprocessor board's calculation abilities when it ships. DayStar expects many applications to follow suit in early 1994.

Users will be able to upgrade to the nPower accelerators when they ship early next year. DayStar Digital, 404/967-2077.

—SUZANNE COURTEAU

Turn Printing on Its Side

HOPE FOR CROWDED DESKS

With the SideWriter KX-P5400, Panasonic has developed a unique form factor that distinguishes its printer from the pack. Because it rests on its side, the SideWriter has a footprint of about half a square foot—smaller than an 8.5-by-11-

SCOTT PETERSON

This unnamed PowerPC coprocessor board is based on DayStar's nPower technology codeveloped with Apple.

inch sheet of paper—and stands just under a foot high. At 14.3 pounds, the SideWriter transports readily (with its optional carrying case) and fits into the overhead luggage bin of a jet. But the PostScript Level 2 personal printer isn't designed solely for mobility; it's intended for anyone with limited space or a need for secure, private printing—and perhaps faxing.

RICHARD RETHEMEYER

The Panasonic SideWriter KX-P5400 is a transportable printer designed to rest on its side.

The SideWriter KX-P5400 comes with 2MB of RAM and 17 Adobe fonts. The laser-quality printer uses an LED-based marking engine, produces 4 pages per minute, and offers 300-dpi resolution. The suggested list price is $999, not including the necessary AppleTalk interface. An optional PostScript, plain-paper fax board sends and receives Group 3 fax documents at 9600 bps from within your application. It lists for $499.

The printer, which complies with the Energy Star power-saving program sponsored by the EPA, was expected to ship in September. Panasonic, 201/348-7000.

—WENDY SHARP

BUGS & TURKEYS

The following steps corrupt high-density floppies on the Quadra 800 and Centris 650: (1) In the Cache Switch control panel, hold down the option key while clicking on the More Compatible button—this allows you to change the setting without a restart; and (2) Put in a high-density floppy and eject it. The disk is now unreadable. Apple is not currently offering a fix.

The Symantec C++ 6.0 compiler doesn't work with its complex math library. A free compiler upgrade, 6.01, addresses this and other bugs. Symantec says the upgrade has been available from the company and online services since late September.

Older Apple Keyboard II's will generate the number 4 if you quickly type 89, 98, 67, or 76 with the number keys above the QWERTY row. Apple has reportedly known of the problem for over two years. If your keyboard has this problem, Apple suggests using the number keypad for all numerical entry.

The CoActive Connector lets you easily share files and printers among Macs and DOS PCs. But the PCs will only mount Mac volumes that have names using *CoActive* as the first eight letters. CoActive tech support says that this is a problem; CoActive marketing says that this is a feature. The company plans a Chooser-like solution that allows any volume name.

Macworld will send you a Bug Report T-shirt if you are the first to inform us of a serious, reproducible bug that we report in this column, or a Turkey Shoot T-Shirt if we shoot your turkey in this space. See *How to Contact Macworld.*

AV Macs Spur Development

PRODUCT ROUNDUP

Apple's AV Macs come with features that no other models have built in, and developers have begun to announce products that take advantage of them. At press time eight products for the AV machines had already been introduced, and most of those are expected to ship by the end of the year.

For instance, the AV Macs' built-in AT&T 3210 Digital Signal Processor (DSP) means extra horsepower for graphics, sound applications, and voice recognition. VideoFusion's (419/891-1090) QuickFlix ($149) digital video-editing software is one of the first packages that can recognize spoken PlainTalk commands. Video editors can simply say, "Select clips one and two," or "One-second iris transition," and then watch as their commands are carried out.

Some companies, such as Great Wave Software (408/438-1990), let the Mac do the talking. The company's NumberMaze ($69.95) and KidsTime Deluxe ($49.95) educational programs both talk back to young players, using MacinTalk 2 and MacinTalk Pro, the text-to-speech engines included with the AV Macs.

Less exotic but just as significant, many companies are basking in the glow of Apple Real-Time Architecture (ARTA), the Apple stan-

continues

In Brief

1.3-Gig Optical Disks

Twice the capacity of previous optical disks, the new 1.3GB double-density optical disks work with Alphatronix's Inspire III family of optical libraries. The libraries, starting at $14,900, now handle 20GB to 190GB. 919/544-0001.

Programs by the Bushel

Ingram Micro, a leading software distributor, has begun distributing more than 100 Macintosh programs encrypted on a single CD-ROM. Buyers can test demo versions of the programs contained on the CD-ROM. When they're ready to purchase a title, they call an 800 number, give a credit card number, and receive a password for instant access to the program and its documentation files.

Iomega MO Drive

The LaserSafe Plus from Iomega is a 1.3GB magneto-optical drive with an average seek time of 19ms. The 5.25-inch device has a sustained read rate of 2.2MB per second and a sustained write rate of 1.1MB per second. Now shipping, the drive has a list price of $4995. 801/778-1000.

Faster DOS Emulation

Insignia Solutions' SoftPC, a program that lets the Mac mimic a PC and run DOS or Windows programs, sports a faster emulation engine in version 3.1. According to Insignia, SoftPC 3.1 works 30 percent faster than previous versions and includes software that lets a Macintosh user access Novell NetWare file servers and non-AppleShare file servers. SoftPC 3.0 (entry level) lists for $165, SoftPC 3.1 Professional goes for $325, and SoftPC 3.1 with Windows for $499. Insignia also upgraded AccessPC 3.0 ($129), a file-translation program that lets Macintosh users double-click to open DOS and Windows files on the Mac desktop. 415/694-7600.

dard DSP architecture that should mean fewer compatibility headaches. For example, OSC's (415/252-0460) Deck II 16-bit recording and editing software ($299) runs just fine either on an AV Mac or on a standard Mac equipped with an ARTA-compatible DSP board. The same is true for several graphics products, including Painter 2.0 with PainterX2 ($149 and $79 from Fractal Design, 408/688-5300) and VideoFusion's VideoFusion 1.5 ($649) effects package.

So far, some of the other AV bells and whistles have received more attention, but the AV's GeoPort telecommunications architecture might give digital telephony the foothold it needs to become a major use of the Mac, used in conjunction with Apple's Geoport Telecom Adapter.

Using the GeoPort adapter, Jabra Corporation's (619/622-0764) Ear Phone Streamline AV ($149) will be able to turn your Mac into a telephone. Users will slip a tiny Ear Phone microphone-and-speaker combination in an ear—the Ear Phone's mike will then pick up the user's speech through bone vibrations. So equipped, and with the company's Personal Dialer software (included with the Ear Phone), you could say, "Call home," and your Macintosh would dial up the number. Then you could carry on a conversation via the Ear Phone instead of having to pick up a phone receiver.

When Articulate Systems (617/935-5656) ships PowerSecretary and its messaging module, you'll be able to call your Mac and have it read your fax or E-mail messages aloud via PlainTalk.

PowerSecretary also can take dictation at speeds up to 45 wpm, but that requires a 68040-based Macintosh with a 16-bit sound board because of the demands of processing the speech at the same time as continually searching the program's extensive phonetic dictionary for matches.

—CAMERON CROTTY

Products for Apple's Newton

Vendor	Product	Ship Date	Price*	Phone
Business Tools				
Aldus Consumer Division	PIM (unnamed)	1993	TBA	619/695-6956
Apple	Fortune 500 Guide to American Business	Fall 1993	$100	408/996-1010
	Money Magazine Business Forms	Fall 1993	$40	408/996-1010
	Money Magazine Financial Assistant	Fall 1993	$100	408/996-1010
Avalon Engineering	Presenterpad	1993	$139	617/247-7668
Chancery	CSL Profiles In Hand	Fall 1993	TBA	604/294-1233
ComputerBooks	medical software bundle (unnamed)	TBA	$800	714/966-2023
Dubl-Click	GoFigure	Fall 1993	$100	818/888-2068
Great Plains	Personal Time & Billing	TBA	TBA	701/281-3130
HealthCare Communications	Hippocrates	Fall 1993	$300	402/489-0391
Integration Systems	Portable MLS for Apple Newton	TBA	TBA	415/726-2620
Intuit	Pocket Quicken	TBA	TBA	415/322-0573
MobileSoft	MobileCalc	Fall 1993	$100	408/376-0497
On Technology	Meeting Maker XP upgrade	TBA	TBA	617/374-1400
Pastel	ContactPad	1993	TBA	212/941-7500
Portfolio	Dyno Notepad	Fall 1993	TBA	408/252-0420
Slate	Day-Timer Meeting & Expense Pack	Fall 1993	$100	602/443-7322
State of the Art	Expense It	1993	TBA	714/753-1222
Strategic Mapping	GeoAssist	1993	TBA	408/970-9600
Communications				
CE Software	QuickAccess	TBA	TBA	515/221-1801
Ex Machina	Notify	1993	$150	718/965-0309
Oracle	Oracle Glue	TBA	TBA	415/506-7000
Entertainment				
Apple	Columbo's Mystery Capers	Fall 1993	$80	408/996-1010
	Dell Crossword Puzzles & Other Games	Fall 1993	$100	408/996-1010
	Fodors 94 Travel Manager	Fall 1993	$120	408/996-1010
Claris	ClarisGames for Newton	TBA	TBA	408/987-7227
Fingertip	Fingertip for Golf	Fall 1993	TBA	714/759-9399
	Fingertip for Personal Training	Fall 1993	TBA	714/759-9399
	Fingertip for Sports Analysis	Fall 1993	TBA	714/759-9399
Graphics				
Saltire	DrawPad	Fall 1993	$100	503/622-4055

TBA = to be announced. **Prices are approximate.*

This table is a partial listing of the many announced products that are designed to work with Apple's Newton MessagePad personal assistant.

Sounding Off with DSP

ADDING AV CAPABILITY

Spectral Innovations would like to teach your Mac to sing in perfect harmony. Toward this end, the company is shipping NuMedia, a NuBus, ARTA-compatible sound board based on the AT&T 3210 DSP chip also used in the AV Macs. The NuMedia board has stereo analog line input and output jacks, a stereo microphone input, as well as fiber-optic digital input transceivers. It can record and play back 16-bit stereo sound at 22kHz, 44.1kHz, or 48kHz, making it compatible with CD players and with DAT devices. The board's software extensions route all the standard sound functions through the board, easing performance pressure on the CPU, and all NuMedia's settings are selected through Apple's new Sound Manager (3.0).

Thanks to the board's ARTA architecture, NuMedia also works as a general-purpose sound-and-image accelerator, when teamed with ARTA-capable software. However, the board does not support speech recognition, partly because of the digitization rate that Apple's PlainTalk requires.

The NuMedia board ships with Passport Designs' Passport Producer application software and is currently available for $1195. Spectral Innovations, 408/955-0366.

—CAMERON CROTTY

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Castles	Golf	Sailboats
China & Tibet	Health	Spirit of Buddha
Churches	Insects	Sunrises & Sunsets
Cityscapes	Ireland	Swimming
Coasts	Jewelry	Trees
Computer Graphics	Lakes & Rivers	Waterfalls
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*Not all utilities are available for Macintosh

KUR-0022

Circle 78 on reader service card

"I DON'T NEED (tick) YOUR DATA (tick) PROTECTION SOFTWARE (tick). I'VE HAD MY MAC (tick) FOR YEARS AND (tick) IT HASN'T CRASHED (tick) YET."

Not to alarm you or anything. But if a lot of wishful thinking is all that's standing between you and a Mac meltdown, you may want to check out a more proven method of protection.

We suggest the Norton Utilities for Macintosh v2.0. It both prevents data loss and gives you the most effective data recovery features available. In other words, it's like giving your computer its own personal bomb squad.

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From Peter Norton, the leader in Macintosh utilities.

To learn more, dial FAST FAX 1-800-554-4403 and select option 1, document 411. (For information on easy network installation, choose option 1, document 481.) Better yet, pick up Norton Utilities at your local dealer for about $149.*

You should probably do it today, though. Before your luck runs out.

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SYMANTEC.

Suggested retail price. Actual price may vary. All names are trademarks of their respective companies. For more information in Europe, call 31-71-353111. In Australia, call 612-879-6577. In Canada, call 1-800-465-2266. Everywhere else outside U.S., call 408-252-3570. ©1993 Symantec Corporation.

New Products

THE LATEST MACINTOSH RELEASES

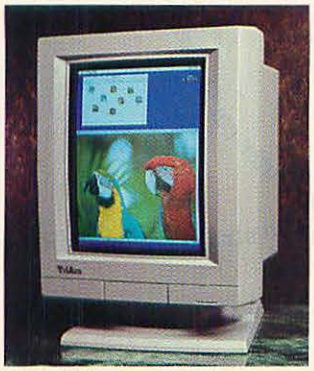
by Cameron Crotty

THIS SECTION COVERS MACINTOSH PRODUCTS FORMALLY ANNOUNCED BUT NOT YET EVALUATED BY *MACWORLD*. UNLESS OTHERWISE STATED, THE MINIMUM REQUIREMENTS FOR OPERATION ARE A MAC PLUS, WITH 1MB OF RAM, RUNNING SYSTEM 6. ALL INFORMATION AND PERFORMANCE CLAIMS ARE SUPPLIED BY THE PRODUCT VENDOR AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY *MACWORLD*. ALL PRICES ARE SUGGESTED RETAIL. PLEASE CALL VENDORS FOR INFORMATION ON AVAILABILITY.

HARDWARE

15-Inch Color Portrait and 17-Inch Color Monitors

The former is a 15-inch single-resolution (640-by-870) color portrait monitor with a 75Hz vertical refresh rate and a .26mm dot pitch. The latter is a 17-inch single-resolution (832-by-624) color monitor with a 75Hz vertical refresh rate and a .26mm dot pitch. Both monitors come with a tilt-swivel base. 15-inch portrait $899; 17-inch $999. TriAm, 714/890-5332; fax 714/890-5335.



15-Inch Color Portrait Monitor

6600/CLX Flatbed Color Scanner

With an optical resolution of 600 by 300 dpi, this 24-bit color scanner handles reflective originals up to 8½ by 14 inches. The scanner ships with Adobe Photoshop 2.5, and Accutext's OCR package. An optional document feeder is available. $1500; document feeder $795. AVR, 408/434-1115, 800/544-6243; fax 408/434-0968.

Acecat II Mac

Featuring a 2000-lines-per-inch resolution, this digitizing tablet has a 5-by-5-inch active area, plugs into the serial port, and comes with a 2-button stylus. A 4-button CAD puck is also available. Device draws power from the ADB port. $149; 4-button puck $49.95. ACECAD, 408/655-1900, 800/676-4223; fax 408/655-1919.

DataPak IO 150

Each of the cartridges for this removable-media Bernoulli drive holds up to 150MB of data. The drive mechanism features a 256K cache and average seek times of 18ms. It can read 44MB and 90MB cartridges and also write to 90MB cartridges. $939. Mass Microsystems, 408/522-1200, 800/522-7979; fax 408/733-5499.

DesignMate 3036

Do you need to look at the big picture? It doesn't get much bigger than an E-size pen plot (roughly 35 by 48 inches). This plotter features an 8-pen turret; plots at up to 42 inches per second; emulates the company's Pacesetter, Artisan Plus, and 1040GT series plotters; and supports CalComp PCI, 960, HPGL, and HPGL/2 protocols. $2995. CalComp, 714/821-2000, 800/932-1212; no fax.

EyeQ LC Player

Tonight could be movie night on your Mac LC with this digital-video-playback board specifically designed for the LC, LC II, and LC III. You can play 640-by-480, 24-bit video at 30 frames per second (only 30 fields per second). An Ethernet connection is available as an option. 4MB min. memory; requires Mac LC. $999; with Ethernet $1295. New Video Corp., 310/396-4000; fax 310/396-0282.

Image Reader Color Macintosh

This 24-bit-color 600-dpi SCSI scanner is sheetfed and accepts reflective originals up to 8½ inches wide and as long as your software (and RAM) allow. The unit ships with Calera Recognition Systems' WordScan OCR software and a Photoshop plug-in driver. $999. Info Products, 408/374-7290, 800/775-7576; fax 408/378-1068.

LanRover/T for NetWare

A remote networking server for Token Ring networks, the product allows either four or eight NetWare users to dial into their Token Ring network and work as if their Mac was simply another node on the network. The server comes in four- and eight-serial-port versions—modems are not included—and supports data-transfer rates of 4 and 16 Mbps and maximum packet sizes of 4K. Client software is included, and the server can be managed with Shiva's Net Manager software. Four ports $2799; eight ports $3899. Shiva Corp., 617/270-8300, 800/458-3550; fax 617/270-8852.

LZR 1580 and LZR 2080

Fast printers for enterprise computing, these 11-by-17-inch, 800-by-800-dpi resolution, PostScript Level 2 printers run at 15 and 20 ppm, respectively, and simultaneously support Novell IPX, TCP/IP, DEC LAT, and Apple EtherTalk through a single Ethernet connection. Each printer stores up to 64 speed/resolution settings. Depending on these settings, each printer can appear on the network as up to 64 separate, virtual printers. The administrator can assign access privileges to them, and users select them just as if there were multiple printers on the net. Both printers are equipped with LocalTalk, RS-232, and Ethernet ports, as well as a SCSI port for connecting a hard drive. LZR 1580 $3450; LZR 2080 $4995. Dataproducts, 818/887-8000, 800/766-7788; fax 818/887-4789.

Multiscan 17SE

This 17-inch Trinitron monitor features a .25mm aperture pitch, can lock into any vertical scan frequency between 50Hz and 150Hz, and provides resolutions ranging from 640 by 480 to 1600 by 1200 pixels (76Hz at 1280 by 1024). Push-button controls adjust image brightness, contrast, sizing, centering, convergence, and color temperature. The monitor also complies with the Swedish MPR II emissions guidelines. An adapter is required. $1499.95; adapter $19.95. Sony Computer Peripheral Products, 408/432-1600, 800/222-7669; no fax.

Multiscan 17SE

P300CD and P2300CD

These double-speed CD-ROMs feature average seek times of 280ms, a 256K cache, and multisession Photo CD compatibility. The products come in internal and external versions and ship with SCSI utilities, drivers, and CD audio play software. The P2300CD has a nicer external case with fun status and access LEDs. P300CD external $799; P300CD internal $699; P2300CD external $899; P2300CD internal $699. CMS Enhancements, 714/222-6000, 800/788-4267; fax 714/549-4004.

Platinum II Magneto Optical Drives

Depending on the model you choose, you get either 128MB or 256MB of data to go. Both drives use 3½-inch cartridges, feature average seek times of 35ms, and are available in either internal or external configurations. 128MB internal $1749; 128MB external $1919; 256MB internal $2849; 256MB external $3029. CMS Enhancements, 714/222-6000, 800/788-4267; fax 714/549-4004.

Power R Presenter 520

This product provides an external monitor port for the LC 520. Users clip a small board onto the Video DAC chip on their Macintosh's motherboard, then mount a two-port strip on the back of the Mac. The strip contains both Apple RGB and standard VGA connections, which can be used simultaneously for as many as three screens at once. $129. Power R, 206/547-8000, 800/729-6970; fax 206/285-0260.

Screen Image Recorder

Screen Image Recorder

This screen recorder plugs into your Mac's external video port, displays the video on an internal high-resolution CRT, and then records the image on standard 35mm slide or print film. Exposure times are around 15 seconds. The unit includes a pass-through connector so you can see what you're shooting.

continues

$6000. Datagraf, 708/520-1223, 800/538-9231; fax 708/215-2313.

Spectrum Scan III
This single-pass 24-bit color flatbed scanner handles 8.5-by-11.7-inch reflective or transparent originals, connects to the Mac via a SCSI or SCSI-2 interface, and features 1200-by-1200-dpi optical resolution. Full-page scans at 1200 dpi take roughly two and a half to three minutes. $4995. Spark International, 708/998-6640; fax 708/998-8840.

TokenPrint and TokenPrint Plus
TokenPrint connects two LocalTalk printers and other devices to Token Ring networks. It has one DB-9 port for Type 1 Token Ring, one RJ-45 port for Type 3 Token Ring, and one LocalTalk port. Once a printer is connected, Macintosh users can select it via the Chooser. Macintosh computers that are connected by the product can use existing SNA gateways to gain access to mainframe services. TokenPrint Plus supports four LocalTalk devices. TokenPrint $699; TokenPrint Plus $899. Dayna Communications, 801/269-7200, 800/531-0600; fax 801/269-7363.

TokenPrint Plus

Two Page Display
This size-large display offers a resolution of 1152 by 870 pixels and a 75Hz vertical refresh rate. The product provides up to 256 shades of gray and can plug directly into the Quadra 700, 800, 900, and 950, and the Centris 610 and 650. The monitor complies with the Swedish MPR II emissions guidelines. $699. Mobius Technologies, 510/654-0556, 800/949-9020; fax 510/654-2834.

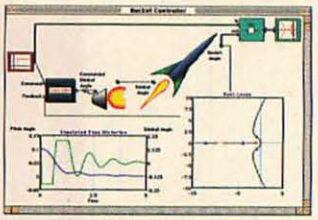
VideoEdge
The heart of this package is a box that plugs into the ADB, printer, and modem ports of your Mac. With the box, you control up to six consumer-grade camcorders or VCRs via cabling or trainable infrared. The box also provides pass-through ports for the ports it takes up (two serial, one ADB). With the included software, you can create a database of clips from the tapes in the attached devices, then create an edit decision list from which the product assembles a finished videotape. The package includes the company's CutsPlus titling software. 5MB min. memory; requires Mac IIx. $695. Silicon Valley Bus, 408/623-2300, 800/775-0555; fax 408/623-4440.

SOFTWARE

AboutFace
What does that typeface look like again? You may ask yourself that question less often if you have this package. AboutFace creates custom style-specimen pages, character set catalogs, and keyboard maps, and the software can reprint a page of text in multiple fonts without requiring you to retype. $69.95. Big Rock Software, 716/288-2860; fax 716/288-0272.

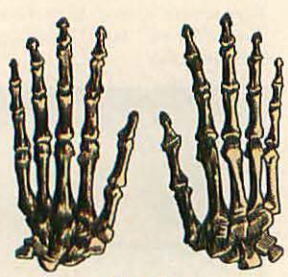
Clean Sweep
If you're concerned about software piracy, this two-pronged attack might keep you in the clear. While an extension puts file copying and deletion commands under password protection, an application scans all mounted volumes and compiles a database of proprietary software for easy reference in future internal audits. The application can also track publishers, tech-support phone numbers, version numbers, and purchase order numbers. $89.95; 10-pack $299.95; 30-pack $499.95. Ariel Publishing, 509/923-2249; fax 509/923-2249.

ControlWare
This software is for designing, simulating, and analyzing dynamic systems and their feedback controllers. Users create systems by clicking and dragging physical elements, sensors, and electronic components and connecting them. The product provides several standard control systems analysis instruments, including Bode, Nyquist, and Root locus plotters. It is based on Imagine That's Extend, a general-purpose simulation package. 4MB min. memory. $1690. Seagull Technology, 408/732-9620; fax 408/736-7103.


ControlWare

DeskTracy
To help you manage your Mac lab, this software tracks users, computer time, and printing, and provides folder locking and system protection. Administrators can set charge rates for individual Macintoshes and printers, customize log-in screens, and generate reports from collected data. 2MB min. memory; requires System 7, Apple LaserWriter Driver 8.0 or Adobe PSPrinter 8.0. $149; five-pack $495; ten-pack $695. Kansas-Bay Systems, 510/339-7300, 800/754-7300; fax 510/339-1179.

Edit One
Having a synthesizer with editable sounds is cool, but shuffling and editing them on a 15-character LCD screen isn't. Once the software is configured for a single specific synthesizer or other MIDI device, you can store, edit, and arrange sounds and MIDI information for that device. The configuration is a onetime affair that makes the software usable with that device only. Requires MIDI interface. $149.95. Opcode Systems, 415/856-3333; fax 415/856-3332.

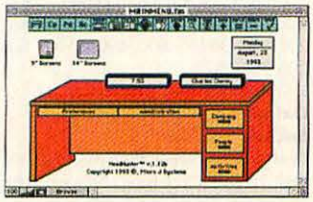

Hands

That kink you feel in your wrist from typing at your computer could lead to painful tendinitis or even carpal tunnel syndrome so help reduce the strain keyboarding puts o

© 1993 Ergodyne

Financial Competence
This tutorial is for folks who don't know the difference between a cash flow report and a balance sheet. Users work their way through a graphic, seven-lesson course in understanding and using financial statements. Users enter information from their own records to help personalize the experience. $99. RealWorld, 603/224-2200, 800/678-6336; fax 603/224-1955.

HeadHunter
The title might sound like the natives are restless, but this is a recruitment management system, designed to help professional recruiters follow the most common steps toward placing their clients. Users can cross-reference job skills and track job orders, presentations, interviews, and follow-up calls. Requires Claris FileMaker Pro. $695. Micro J Systems, 310/453-5059, 800/995-4868; fax 310/453-2251.



HeadHunter

InterPrint
This print client software lets you send output to any TCP/IP-networked Unix print device. You can edit previously defined print queues and, since the Mac has no way of polling a Unix printer to find out what fonts are available, you can map your screen fonts to a list of 39 basic printer fonts. 2MB min. memory. $195; 10 users $1595; 25 users $2995; 50 users $4995; 100 users $8995. InterCon Systems Corp., 703/709-5500, 800/468-7266; fax 703/709-5555.

Kid Cuts
What better use for a Mac than keeping the kids busy on a rainy day? Kids choose paper projects ranging from puzzles and masks to greeting cards and hats, and customize them with paint tools, stamps, and text. Once the projects are printed out, kids cut them out and assemble them with glue or tape. $29.95. Brøderbund Software, 415/382-4400, 800/521-6263; fax 415/382-4419.

Language Explorer
Sprechen Sie Mac? Build your English, French, German, and Spanish vocabulary by matching animated picture tiles of foods, animals, buildings, clothing, and other objects to their corresponding words in four languages. A CD-ROM version contains recordings of all words, pronounced by a native speaker. Requires color. $57.95; CD-ROM $77.95. Nordic Software, 402/488-5086; fax 402/488-2914.

Legal File Management System
This multiuser Filemaker Pro–based system organizes caseloads with 17 screens of information about each case. The software produces reports, form letters, and client lists, handles scheduling, and allows users to record verbal case notes. Reports and records can be customized. 5MB min. memory; requires Mac IIx, 20MB hard disk space. $585. Computer Consulting Group, 213/896-9546; fax 213/617-1759.

Lights Out Sports Fans: Major League Baseball Screen Saver

Lights Out Sports Fans: Major League Baseball Screen Saver
Now the boys of summer can play on your Macintosh's screen all year round. This screen saver blanks your Mac's display with one of ten Game Plans, including a statistics-based baseball game animated with the logos of your favorite teams. Users can also watch Quadrangle's blimp prowl the screen, keep an eye on players in the dugout, or watch fans in the stadium. Requires Mac II. $55. Quadrangle Software, 313/769-1675, 800/253-8397; fax 313/769-1695.

Mario Teaches Typing
Learning how to type can be less drudgery with the help of those two ubiquitous plumbers, Mario and Luigi. The software challenges beginning, intermediate, and advanced typists with arcade games cum typing drills, recording and charting progress along the way. Players must guide Mario through three levels of mayhem by typing quickly and accurately. The humor-impaired can choose the optional nongame drill environment. 2.5MB min. memory. $49.95. MacPlay, 714/553-3522; fax 714/252-2820.

Marketing Plan Toolkit
This modeling tool works in Microsoft Excel and Lotus 1-2-3 for the Mac and helps you create and organize a marketing plan, complete with expenses, unit sales, and market focus. The documentation also attempts to explain the reasoning behind each task, as well as how to use the program. $149.95. Palo Alto Software, 503/683-6162, 800/229-7526; fax 503/683-6250.

MediaMax
This set of HyperCard stacks simplifies the use of videodiscs and other multimedia resources. Users can build presentations from any CAV or CLV videodisc player, adding text and graphics along the way, and can create custom HyperCard buttons to control pictures, sounds, graphics, and QuickTime movies. Requires HyperCard 2.0. $199. Videodiscovery, 206/285-5400, 800/548-3472; fax 206/285-9245.

Network Scheduler 3
The latest version of this cross-platform group scheduling and calendar applica-

continues

ur hands with our rounded, cushioned, height-adjustable wrist rest.

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Odin's Initiation

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Diane Fenster
Pacifica, California

"THE PAINTER UNFOLDS THAT WHICH HAS NOT BEEN SEEN."
Paul Cézanne

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Circle 190 on reader service card

tion supports Mac clients, as well as Windows and DOS. Users can schedule meetings, appointments, and resources with one another across an enterprise network. The software can also use the directory services of an already installed mail system to distribute data across remote servers. 5 users $495; 25 users $1995. Powercore, 815/468-3737, 800/237-4754; fax 815/468-3867.

OnAccount

You're running a business and you need to get your affairs in order, but you don't have the time to implement a full-blown accounting package. This software creates, prints, and stores invoices, maintains accounts for up to 500 customers, calculates finance charges on past due accounts, stores inventory items, and prints a variety of reports. 2MB min. memory. $99. White Crow Software, 802/658-1270, 800/424-0310; fax 802/658-3873.

QuickShip

Wait a minute, Mr. Postman, don't leave without checking out this United Parcel Service manifest program. Users can print COD tags, shipping labels, and manifests, as well as keep a customer-client database and calculate all shipping rates, including ground and air costs for the United States, Canada, and international shipments. $295; site license $695. ShopKeeper Publishing International, 904/222-8808; fax 904/668-9916.

Seize the Day: The Illustrated Personal Organizer

Seize the Day: The Illustrated Personal Organizer

If your days get ugly, maybe your datebook should be beautiful. This product combines a phone and address book, an appointment book, a to-do list, a project list, a personal diary, and a perpetual calendar. It adds 256-color graphics, ranging from perpetually changing "Living Worlds" to galleries of art by famous artists, including Salvador Dalí, Boris Vallejo, Yamagata, and others. Art gallery plug-ins are sold separately. Requires 8-bit color. $59.95; gallery and journal plug-ins range from $19.95 to $29.95. Seize the Day, 707/942-9391; fax 707/942-2998.

SuperLaserSpool 3.1

Get your Mac back sooner with this Print Monitor substitute. The new software version includes improved user-memory control and enhanced memory management. Users can set which folder they wish to spool files to, and PowerBook users on the road can spool documents and have them printed automatically when users reconnect to their printer. $149.95. Fifth Generation Systems, 504/291-7221, 800/873-4384; fax 504/295-3268.

Verisoft Lookup

This client-server directory application allows Macintosh users to access a central VAX database for company information such as phone number, location, or personnel data. The product supports AppleTalk, DECnet, and TCP/IP network protocols, and it features password-protected fields, configurable field widths, and remote access. Server $2000; single client $20; volume discounts available. Verisoft, 408/366-8240, 800/998-6452; fax 408/255-1146.

CD-ROMS

Images With Impact CD-ROM 2.0

A compilation of 3G Graphics' six EPS clip art libraries. The disc also includes nearly 500 colorized versions of black-and-white files, as well as 72-dpi PICT versions of every image. The six libraries are: Accents & Borders 1 and 2, Business 1, Graphics & Symbols 1, People 1, and Places & Faces 1. $499.95. 3G Graphics, 206/774-3518, 800/456-0234; fax 206/771-8975.

Oxford English Dictionary Second Edition

Ever wonder what your high-school math teacher was talking about when he mentioned oblate spheroids? Ever pondered the etymology of the word *bellicose*? This single disc contains all 20 volumes of the English language's most famous dictionary, including definitions for over 500,000 words, over 2,400,000 illustrative quotations, and (thank heavens) search and retrieval software. $895. Oxford University Press, Electronic Publishing, 212/679-7300 ext. 7127, 800/334-4249 ext. 7127; fax 212/725-2972.

Pop and Politics

This product offers 24-bit, 8-bit, and reduced-scale TIFF images of famous musicians and politicians in concert, in Congress, and informally. Notables include Jon Bon Jovi, Arlo Guthrie, James Taylor, Senate majority leader George Mitchell, Jesse Jackson, and Ted Kennedy. All images are royalty-free, and the disc includes Adobe's Photoshop Try-Out software. $79.95. TechScan, 805/985-4370, 800/424-8627; fax 805/985-7221.

Pop and Politics

Think For Yourself

Why rely on interpreted or secondhand data when you can get the real thing? The disc includes over 30,000 pages of data on the environment, economics, demographics, and health, compiled from such sources as the World Health Organization, the U.S. Department of Commerce, and others. Users access data via the included HyperCard stacks.

continues

It's easy to
Mind Your Own Business

Click here to see who owes you money.

Click here to *recall* checks and other transactions instead of re-keying them.

Click here to save money, by taking advantage of early payment discounts.

Click here to call the people you promised to call – it even dials for you!

That's because M.Y.O.B's To Do List shows you exactly where you stand.

You'll know in seconds what people owe you, what you owe them, and how much inventory you have on hand. *You'll have the information you need* to make good decisions and manage your business profitably.

And M.Y.O.B. makes running your business incredibly easy. Everything you need is just a mouse click away. Want to bill a customer? Click "Invoice Sales" and fill in the blanks. The invoice screen looks like an invoice (just as the check-writing screen looks like a check).

It's equally easy to record receipts and track expenses and inventory. And even easier to stay in touch with customers and suppliers. Dial right from the Card File with a click of the mouse.

This full-featured program generates over 80 customizable reports. You can analyze sales by item, customer, time period and more. And every form you *print* is customizable, too, so it can look exactly as you want it to, logo and all.

Get COGITO the #1 selling computer game, a $59.95 value FREE! Just order M.Y.O.B. by 1/31/94

Now through January 31, it's inexpensive too!

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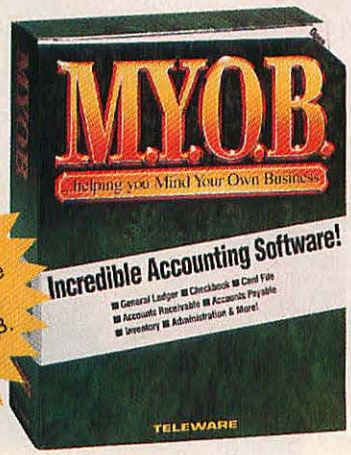


We've won every industry award for accounting software in the past 18 months.

You could systematically compare accounting packages. But MacUser and MacWorld have done it for you. Both declared M.Y.O.B. the *Editor's Choice*.

In fact, over the past 18 months, M.Y.O.B. has won *every comparison* of accounting software in the industry.

And here's the even better news. Now you can get M.Y.O.B. for just $99.95 (plus $6 shipping and handling). What's more, you're free to try M.Y.O.B. for a full 90 days! If you are dissatisfied *for any reason*, simply return the program to us for a complete refund. **This special offer expires 1/31/94, so call today!**

U. S. and Canada, call

1-800-851-1315
Ext. 842
(7 AM to 7 PM CST)

or see your local software dealer.

Dealer pricing may vary. To order by mail, send your check (payable to Teleware) to: Special M.Y.O.B. Offer, P.O. Box 1339, Burnsville, MN 55337. NJ residents add 6% sales tax.

TELEWARE

Requires Macintosh Plus or better, 2MB RAM or better, a hard drive with approximately 2MB of free space. System 6.0 or later with the font Geneva 10 installed. An Apple ImageWriter or LaserWriter printer is optional. An Apple (or compatible) modem is optional. M.Y.O.B. is a trademark of Teleware, Inc. All other products mentioned are trademarks of their respective companies.

Circle 194 on reader service card

Requires HyperCard 2.1. $249. PEMD Education Group, 707/894-3668; fax 707/894-5200.

ACCESSORIES

MacDrive Probe

To catch a thief, you must think like a thief, but to catch a floppy drive problem, should you think like a floppy drive? No, but you might want to try this FDHD floppy drive diagnostic package, which comes with test software and a high-resolution diagnostic alignment disk. The Depot Edition of this product includes the MacDrive Probe Interface Module, an external test board with LED indicator lights, and test points to allow easy monitoring of drive-control signals. $149; Depot Edition $399. Accurite, 408/433-1980; fax 408/433-1716.

MacDrive Probe

MonitorMiser

Putting your Mac to sleep with a screen saver might prevent phosphor burn-in, but this product plugs into your keyboard and monitor and shuts down the entire monitor after a user-defined period of inactivity (hardware switchable from 4 to 44 minutes). $79.95. Technology Marketing Partners, 415/940-7800; fax 415/940-7849.

PowerBack

In the continuous quest to find the ultimate road-warrior widget, we ran across this product, which attaches to a PowerBook and holds a VST ThinPack battery underneath the machine. The product adds about ½ inch to the bottom and ¾ inch to the rear of the PowerBook. $40. Pilot Technologies, 612/828-6002, 800/682-4987; fax 612/828-6806.

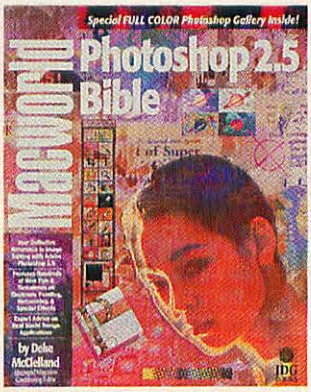
SCSI Doc

If you've got a PowerBook 100, 160, 165c, 180, or 180c, you can already either connect SCSI devices to your machine or hook up your PowerBook to another Mac as an external SCSI device. This HDI-30–to–DB-25 adapter has a switch that lets you use it for both of the above purposes. The unit also features an LED that indicates the presence of termination power on the SCSI bus. $49. APS Technologies, 816/373-5800, 800/235-2752; fax 816/478-6506.

BOOKS

The Mac Internet Tour Guide

Everybody loves the Internet but always asks the same questions: Where do I go and what do I do when I get there? The book offers basic tutorials for beginners, as well as road maps to information resources. An included disk contains filetransfer, E-mail, and decompression software that replace the standard Unix interface with a friendly Mac front end. Written by Michael Fraase. 280 pages. $27.95. Ventana Press, 919/942-0220, 800/743-5369; fax 919/942-1140.



Macworld Photoshop 2.5 Bible

Macworld Photoshop 2.5 Bible

Macworld's own Deke McClelland leads readers through the intricacies of channel operations, color mapping, distortion filters, and other expert-level Photoshop functions. The book includes a section on filters and special effects, describing over 70 custom filters complete with algorithms and logic explanations. McClelland also covers printing with composite film, color separations, and duotones. 650 pages. $29.95. IDG Books Worldwide, 415/358-1250, 800/62-2974; fax 415/358-1260.

Sad Macs, Bombs, and Other Disasters

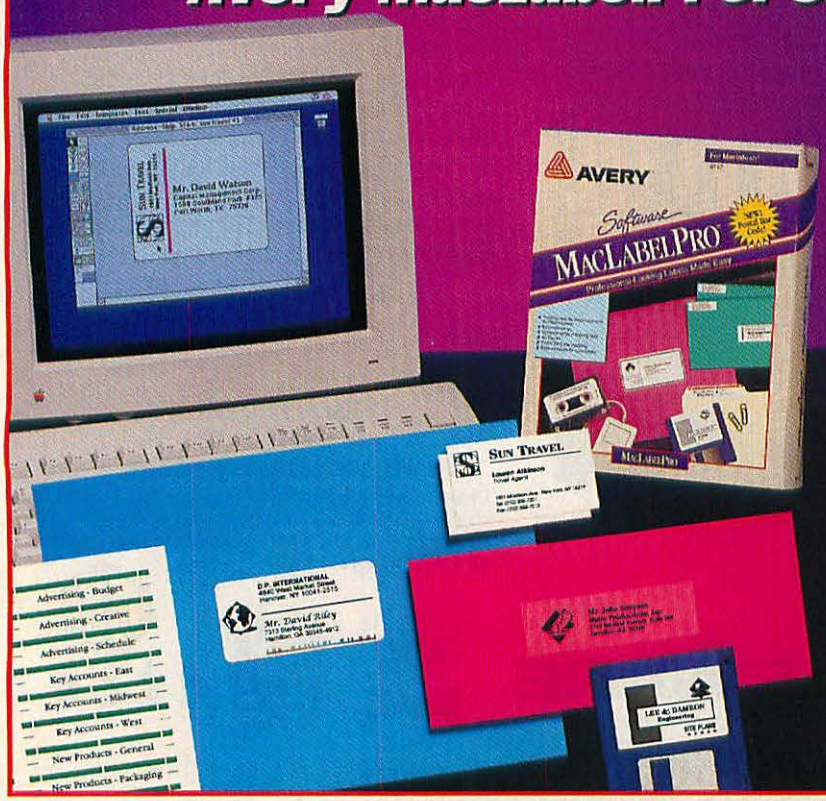
Don't panic when you see that burning fuse! Ted Landau shows novices and pros how to take control of their Macs in a crisis, plus how to identify, solve, and prevent problems created by applications, corrupted files, and extension conflicts. 608 pages. $24.95. Addison-Wesley Publishing, 617/944-3700, 800/358-4566; fax 617/942-1621.

Teach Yourself PageMaker 5.0 for the Macintosh

A ground-zero tutorial for newcomers and a refresher course for old hands, this book covers page-layout and typography basics, as well as PageMaker's capabilities, including the spelling checker, find and change tools, and indexing features. It also offers advice on managing large documents. Written by David Browne, 400 pages. $21.95. MIS:Press, 212/886-9200; fax 212/807-6654. ■

To have your product considered for inclusion in *New Products*, send an announcement with product name, description, minimum memory, peripherals required, pricing, company name, and phone number to New Products Editor, *Macworld*, 501 Second St., San Francisco, CA 94107. *Macworld* reserves the right to edit all product announcements.

Avery MacLabelPro. Simply Brilliant!



The Easiest Way to Create Great-Looking Labels ... and More

Avery MacLabelPro™ gives you everything you need to design and print Avery labels, index dividers, business cards and more in minutes. Just choose the product you want, add your text and design elements, choose your mailing list and print. It's that simple. And the results are simply brilliant.

Features include:

- Ready-to-use layouts for 120 Avery products
- Easily merges lists of any size created in popular software programs
- Drawing tools, graphics import, text rotation and postal bar codes
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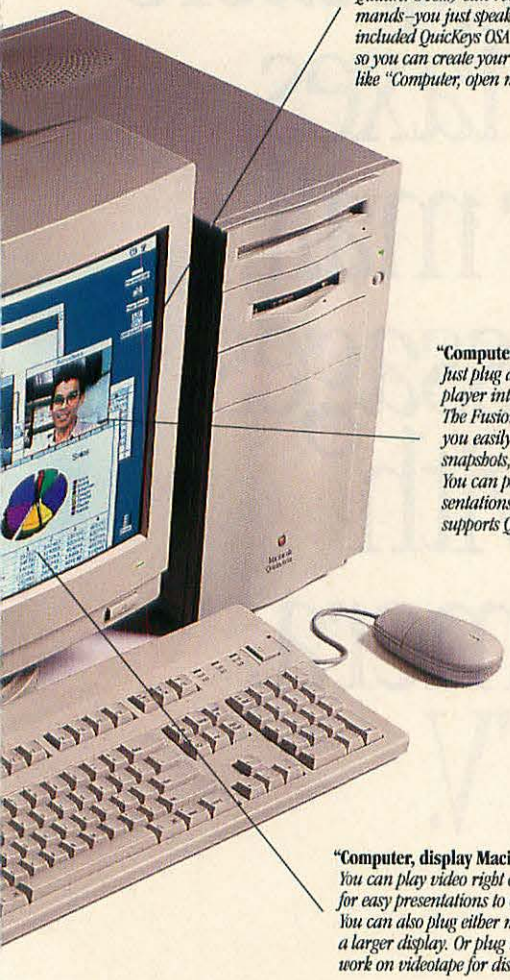
AVERY

Circle 197 on reader service card

Announcing the first personal computers that will send faxes, read you your mail, take phone messages and work with your video camera, VCR and TV.

anything you tell them to.

"Computer, open my word processor."
Now work the most intuitive way. With Apple PlainTalk™ AV computers (here, the Macintosh Quadra 840AV) can recognize spoken commands—you just speak naturally. We've also included QuicKeys OSA Component software, so you can create your own verbal commands, like "Computer, open my word processor."



"Computer, start video."
Just plug a video camera, VCR or laserdisc player into the back of either AV computer. The FusionRecorder software included lets you easily capture video and single-frame snapshots, or record 16-bit stereo sound. You can paste your videos directly into presentations, documents or any software that supports QuickTime."

"Computer, display Macintosh on TV."
You can play video right on your AV computer monitor for easy presentations to coworkers, clients or a class. You can also plug either machine into a TV, if you need a larger display. Or plug into a VCR, and record your work on videotape for distribution.

"Computer, play CD."
Add the AppleCD™ 300i disc drive to either machine, and you can access huge libraries of clip art, sound effects, video clips and more. Or just play your own music CDs while you work.

The Macintosh Centris 660AV and Macintosh Quadra 840AV

You've probably read that telephones, computers, television and other technologies will converge soon.

This is where they meet. Introducing the Macintosh Centris™ 660AV and Macintosh Quadra™ 840AV personal computers. These two computers offer a suite of communication capabilities called Apple® AV Technologies: a telecommunications center, easy video input/output connections, voice recognition and text-to-speech abilities.

Apple AV Technologies.
Telecommunications, video, speech—all the ways you communicate.

For the first time, use a Macintosh® to pick up phone messages with a point and click, record video by plugging in a video source, and open a file by saying, "Computer, open."

Many of these new functions are sped along by a digital signal processor (this chip flies through data at the rate of 55 MHz in the Macintosh Centris and an even faster 66 MHz in the Macintosh Quadra).

With a 25 MHz 68040 processor and up to 68MB of RAM, the Macintosh Centris has the horsepower required to breeze through huge spreadsheets and documents. And there's room to add a 500MB internal hard disk, a CD-ROM or SyQuest drive and a NuBus expansion card.

The new Macintosh Quadra will make publishing, graphic design and other communications professionals salivate. Its 40 MHz 68040 processor and up to 128MB of RAM make it the most powerful Macintosh ever. And it has room for a gigabyte of hard disk storage, four internal storage devices and three NuBus expansion cards.

Best of all, you can get a Macintosh with Apple AV Technologies starting at $2,489.* Once again, Apple puts the most amazing kind of power within your reach. The power to be your best.™ Apple

Apple Computer, Inc. AppleCD, AudioVision, GeoPort, Macintosh Centris, Macintosh Quadra, PlainTalk and QuickTime are trademarks of Apple Computer, Inc. This ad was created using Macintosh personal computers.

In fact, they'll do just about

"Computer, read me today's mail."
These computers will actually speak to you, reading aloud your e-mail, documents or spreadsheet numbers. Our new Apple AudioVision™ Display, with its sensitive microphone and built-in speakers, is the perfect all-in-one monitor for speech capabilities, multimedia presentations and more.

"Computer, call Michelle Dunn."
With Apple GeoPort, you can turn your AV computer (in this case, the Macintosh Centris 660AV) into a telephone and an answering machine. The hands-free phone lets you do work on-screen while you talk. And both computers have ES·F2F software, so all you need is a video camera to hold a video-conference across a local area network.

"Computer, fax letter to Steve Wingate."
Forget the fax machine. The optional Apple GeoPort™ Telecom Adaptor includes fax and modem software–everything you need to send and receive faxes from your desk or use on-line services. And both computers let you try out ExperFax, an application that converts your faxes into text.

*Manufacturer's Suggested Retail Price as of 8/15/93. Reseller prices may vary. ©1993 Apple Computer, Inc. All rights reserved. Apple, the Apple logo, Macintosh and "The power to be your best" are registered trademarks of A

Macintosh CPU and Display

Computer and Monitor

Quadra 840AV

PROS: The speediest Mac CPU currently available; basic multimedia tools all in one package; decent PlainTalk speech recognition; DSP chip for parallel processing of audio and video. **CONS:** Limited third-party software support; some hardware and software incompatibilities; RAM hungry; RAM upgrades difficult to install. **COMPANY:** Apple Computer (408/996-1010). **LIST PRICE:** 8/230, 1MB VRAM, Ethernet $4069; GeoPort Adapter $129.

MW ★★★★

AudioVision 14 Display

PROS: Integrated audio and video; good picture; good sound; decent microphone. **CONS:** Screen much too small for multimedia work. **COMPANY:** Apple Computer (408/996-1010). **LIST PRICE:** $769.

MW ★★★

PAUL BERG

APPLE'S NEW QUADRA 840AV IS A technological tour de force, brimming with sophisticated speech-recognition and audio-video technology. Building on the fast, slick, attractive Quadra 800 design, Apple has packed the same case with a 40MHz 68040 CPU and an AT&T 3210 digital signal processor (DSP). The DSP handles the sound, telecommunications, and video tasks, including Apple's PlainTalk voice-recognition technology. The 840AV also incorporates a number of performance optimizers, such as DMA (direct memory access) and the new SCSI Manager (version 4.3), which supports asynchronous tasks. The expansion slot supports the new, speedier NuBus 90 standard and includes a Digital Audio Video (DAV) connector for use with third-party adapter boards (expected to be available in the future).

The rear panel on the 840AV has some connections reminiscent of a videocassette deck. In addition to the usual set of Macintosh jacks, the 840AV sports both Composite RCA and S-Video ports. It supports the major video standards—NTSC, PAL, and SECAM—offering international video compatibility.

The base model has 1MB of video RAM (VRAM), which will drive a 19-inch monitor with 8-bit color. You can add another 1MB of VRAM for 16-bit color with a 19- or 20-inch monitor and 24-bit color for smaller screens. If you're looking for large-screen 24-bit color, you'll have to buy a third-party video display adapter.

In addition to System 7.1 and QuickTime, the 840AV comes with Apple's new PlainTalk speech-recognition software; Video Monitor, for displaying video images on the screen; Fusion Recorder, for capturing video images; and the Open Scripting Architecture (OSA) component of CE Software's QuicKeys 3.0, which lets you use voice-activated macros through AppleScript or QuicKeys.

Apple hasn't forgotten that the little things matter as well. At long last, it offers an intuitive way of turning the computer off that won't confuse novice Macintosh users. You can still select the Shut Down command, but you can also shut down by turning the front-mounted power switch off, or by pressing the power switch on your Mac's keyboard, without endangering your data.

How the 840AV Fares

You'll quickly realize that the basic 8MB RAM configuration of the Quadra 840AV isn't enough. PlainTalk itself can easily gobble up 3MB or 4MB of RAM, depending on the voice macros you've created.

If you have System extensions that swell the basic system size to 4MB or so, you'll find little elbow room in which to use a RAM-intensive graphics program. Apple provides the high-end versions of the 840AV with a standard 16MB of RAM.

Apple's new scheme of putting system software resources in ROM, and the company's hardware machinations to eke out as much performance as possible, haven't been entirely painless for third-party manufacturers. Monitors that "sync on green" (provide horizontal synchronization on the green video signal) won't work properly with the new AV Macs. Some video boards may need ROM upgrades to be compatible with the NuBus 90 format. I've run across a smattering of reports about software problems, too, with products including Adobe Type Manager, Apple's PC Exchange, Global Village's TelePort software, Stac Electronics' Stacker for Macintosh, and others. Many of these products will be updated by the time this review is published. If you're in doubt, call the vendor or manufacturer about compatibility issues to avoid any nasty surprises.

The applications that ship with the 840AV mainly demonstrate the possibilities of the technology and are not full-featured realizations. For example, although you can capture the full frame of a video image, you cannot capture a moving video picture, except at low frame rates, without a third-party adapter board. Also, the supplied QuicKeys 3.0 software's functionality is limited to its Open Scripting Architecture, which enables you to activate macros by voice. You have to upgrade to the full program for the rest of its macro-creation capability.

You can display a video image from a camcorder, laser-disc player, or VCR (or even your TV set) in its own window, and at the same time prepare a spreadsheet or word processing document, without suffering any performance hit that is noticeable.

Apple's ads for the AV Macs emphasize the PlainTalk feature, which enables you to issue voice commands to activate basic computer functions, such as "Computer, restart" or "Computer, close window." You can also trigger macros by voice, have the computer read selected text for you, and even have it respond to your questions with preprogrammed answers. During my tests, PlainTalk followed most of my commands (made in the large and somewhat noisy Macworld Lab), but whenever I asked the 840AV to "Shut down," it opened the Sharing Setup control panel instead. PlainTalk at this stage isn't trainable, but you can make some adjustments to its recognition threshold. The artificial voices produced by the 840, however, still sound artificial. After the excitement wears off, you might find yourself going back to the keyboard and mouse—at least for now. Once PlainTalk is fully developed it will be able to take over more and more tasks now done by hand.

The Macworld Lab benchmarks indicate that the 840AV performs slightly faster, overall, than the Quadra 800. More surprising is that an 800 equipped with DayStar's $399 Fast Cache Quadra PDS board (with 128K of ultrafast RAM) can approach, and in most cases exceed, the performance of the 840AV (though without the AV's fancy audio and video capabilities). The 840AV, although fast, lacks the performance-boosting memory-interleaving capability of the 800 (which works when two or four SIMMs of the same capacity and speed are installed).

GeoPort Observations

Apple's $129 GeoPort interface allows you to use the 840AV as both a telephone and a modem. Apple's Express Modem software (an updated version of the software that ships with Apple's Express Modem for PowerBooks and Duos) emulates a 9600-bps V.32 modem, though it seemed a little finicky at getting reliable connections. With 14,400-bps modems about to drop below $200 now, however, you may opt to skip this convenience, or wait until a third-party publisher provides faster throughput. The 840AV also has ApplePhone software, which allows you to place and receive calls on your Mac and keep a phone log.

The AudioVision 14 Display

The screen is Apple's 14-inch RGB Trinitron, but the rest of the package is anything but conventional. At the bottom of the case sit two loudspeaker grills, with several digital controls between them to control contrast, brightness, volume level, speaker muting, and the microphone. The mike's grill is a part of the front bezel, sitting just above the screen.

The speakers are optimized for near-field use, unlike home audio systems, which are designed for the best listening point to be several feet in front of the speakers. The sound quality is surprisingly rich and full-bodied for such small speakers, although I wouldn't suggest that you throw out your stereo just yet.

The microphone recorded sound cleanly and crisply. The picture was a near match to the regular 13- and 14-inch RGB monitors Apple has produced, but for the kind of multimedia work the 840AV is designed for, the AudioVision is just too small. One hopes that both 16- and 19-inch AudioVisions aren't too far off in Apple's production plans.

Summing Up

Anyone who has accused Apple of losing its touch for innovation should look to the 840AV as a promise of the future of audio and video on personal computers. Even though some of its nifty audio-video features need further development, the 840AV is the best all-around Mac yet. It's very fast, fun to use, and will help you get your work done in a more productive fashion—and isn't that what it's all about?

—GENE STEINBERG

MW LAB Quadra 840AV: How Fast Is It?

CORE PERFORMANCE INDEX

Times as fast as a Classic (Classic = 1.0).

Use these standard ratings of overall performance, based on a core test suite, to compare systems across classes.

Best result in test. Products are arranged in decreasing order of overall performance.

	Common	Scientific
	Typical business tasks in Microsoft Excel and Word that use the Mac's processor, drives, and video display.	We added to the common tasks several scientific calculations that use floating-point math.
Quadra 800 w/DayStar Fast Cache	18.1	32.7
Quadra 840AV	16.5	28.8
Quadra 800	16.4	26.8

BUSINESS-SYSTEM PERFORMANCE TIMES

Times are in seconds. Shorter bars are better.

Use these results to compare the performance of systems for different types of real-world business tasks. The results can be compared with any other *Macworld* Task-Performance Times for Business Systems.

	Processor	Drive-Access	Video-Display	Floating-Point
	Several tasks in Adobe Photoshop, Aldus FreeHand, Microsoft Excel and Word, Claris FileMaker Pro, and QuarkXPress.	File open in Adobe Photoshop, Microsoft Excel and Word; and disk-based sorts in Claris FileMaker Pro.	Vertical scrolling in Microsoft Excel and Word, and QuarkXPress.	Scientific recalculations (which use floating-point math) in Microsoft Excel.
Quadra 800 w/DayStar Fast Cache	118.6	52.0	44.6	15.6
Quadra 840AV	118.1	59.2	49.1	17.5
Quadra 800	129.1	54.1	52.0	19.1

Apple Newton MessagePad

Personal Digital Assistant

PROS: With user's cooperation, handwriting recognition actually works; storing data as objects helps search capabilities; unique Assist function anticipates standard chores. **CONS:** Internal software needs more work; most third-party software not yet available; needs longer battery life. **COMPANY:** Apple Computer (408/996-1010). **LIST PRICE:** $699; Newton Fax/Modem $149; Connection Kit for Macintosh $129.

MW ★★★

OF WHAT USE, SIR, IS A NEWBORN baby?" Michael Faraday supposedly said to a businessman who remarked that one of Faraday's early experiments in electromagnetism seemed pretty pointless. It helps to keep this quote in mind when evaluating the Newton MessagePad, Apple's latest premature offspring. Using the Newton, you can see a universe of future possibilities—during your first afternoon you'll think of three new applications you'd like to see. But those applications don't exist yet. Apple got nearly everything right about the Newton except the release date, producing a first few months of disparaging press (cartoons, even) and hundreds of disgruntled customers coast to coast.

This review refers to version 1.04 of the MessagePad software and version 1.0 of the Newton Connection Kit for Macintosh. Many of the early complaints about the Newton have been fixed in 1.04, and the Connection Kit lets you do your heavy start-up data entry (name files, first month's calendar) with a Mac screen and keyboard. I just missed getting the version 2.0 upgrade of the Connection Kit (free to 1.0 users), which will let you translate data files into Newton files—this kind of software capability should have been available at launch but wasn't. The unit I reviewed was also electromechanically perfect, with no freeze-ups, AC adapter glitches, or other flaky electrical behavior.

Getting It Write

The first issue, of course, is whether this thing can actually read handwriting.

If you walk up to a Newton and sign your name, the probability is less than 10 percent that the Newton will read it correctly. There are three reasons for this. First, your handwriting is essentially a font, and the Newton hasn't been trained in your font yet. Second, your name is unlikely to be in the Newton's dictionaries, which it consults to make a probabilistic guess at word identification. Finally, your signature is likely to be the least "normal" bit of handwriting that you do—look at the individual letters and compare them with the same letters in other words that you write and you will see that a signature is usually quite distinctive (that's why they don't ask everyone simply to write *albatross* on credit card forms).

However, if you embark upon a cooperative venture with the Newton's handwriting-recognition software, you will find that it eventually recognizes your slightly-Newton-adapted writing with about 96 percent accuracy, and that you can find substitute words (ones that are somehow easier for the Newton to recognize) for the remaining 4 percent. *Cooperative* implies four basic steps. Under Preferences in the Extras drawer, you must first set the sliders under Handwriting Style for spacing and recognition speed—there's a trade-off between speed and accuracy, since higher accuracy requires more time-consuming match analysis. Then you go through the Letter Styles in Preferences, picking the letters that look like your writing. The third step is spending about a half-hour in the Handwriting Practice section, which offers you insight into the mechanics of the recognition process by showing you the Newton's conclusions and reporting statistical near-misses. Finally, it helps to play a few hours of the game Calligrapher, from the same Russian company that sold Apple the recognition algorithms, and then review the material in Instructor (these are both on the Newton's Getting Started card).

STAN MUSILEK

Apple Newton MessagePad

If you do all this and additionally resign yourself to typing in technical terms, specialty words, and the names of your friends on the pop-up keyboard screen and saving them in your user dictionary, you will have a system that's quite acceptable at reading handwritten notes. On a sample dictionary of 100 biochemical, engineering, and geology terms, and *Macworld* editors' last names, the test Newton read 99+ percent correctly. As an index of this software accomplishment, the Newton does better at recognizing handwriting, after training, than most OCR programs do at reading scanned printed material. The advantage incorporated in the Newton software is timing recognition—whereby the program isn't just reading a bitmap, it's looking at the order of appearance of character features. This is a problem if you habitually pause in the middle of words and never cross *t*'s, but it makes highly accurate recognition possible if you make a few compromises with the Newton Way. This timing recognition may mean that the big winner in the personal-digital-assistant game is Apple's manufacturing partner, Sharp. Japanese written characters are set down in a precise stroke order, and bad handwriting is not a source of personal pride in Japan, so Sharp may be able to offer nearly 100 percent recognition with no special machine training.

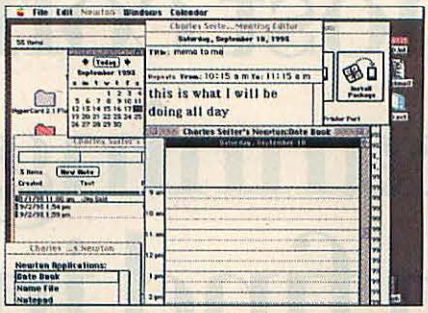
Some points in recognition remain puzzling, however. There seems to be little chance that the Newton will ever read the word *I'll* correctly (I tested this with eight users, resetting the recognition training each time). The Newton recognizes the replacement phrase "I will," a seemingly similar collection of loops, nearly 100 percent of the time. Recognition of paragraphs is inconsistent, and it takes extra skill to get punctuation right. At the Handwriting Style recognition setting that's fast enough for the user to take notes in an interview, accuracy becomes unacceptable. Many users report turning off the handwriting recognizer for fast note-taking, but this just saves an image of the handwriting that the Newton can't recognize later. As a helpful hint for the speed-obsessed, please note that if you turn off the Newton's sound, you can clip along on the pop-up keyboard at nearly 20 words per minute, with practice. With Panorama-style "clairvoyance," the keyboard could be an important asset.

Geometry recognition is a simpler task, and the Newton does a very good job of cleaning up circles, lines, and polygons. Since these drawing parts are stored as objects that can be positioned independently, it's fairly simple to construct small but precise diagrams. You can also turn off geometry recognition to make notes of free-form sketches, but the tidy appearance of "recognized" forms makes it likely that you'll leave recognition working most of the time.

Objectivity

The data-handling section of the Newton consists of a general-purpose Notepad, a Names file, and a Calendar. Since pieces of data are stored as objects rather than in structured files, it's easy for the Newton to swap data among the three categories. Thus, in the Notepad, you can write "Call Bill Hansen," tap the Assist icon, tap Do, and the Newton will look up Bill Hansen's phone number in the Names file and dial the phone number, either through the Newton fax modem or into a standard phone through the Newton's tiny speaker. This impressive facility was marred in the test Newton by a tendency to insert the number 16 at the beginning of each telephone number it found in the Names file (we simply hand-erased the 16 each time, but further system patching beyond version 1.04 is needed). Assist is full of useful tricks: you can also write "Meet Tim Schweig at 5 PM on Oct. 7," tap Assist, then Do, and then tap Schedule in the next dialog box, and the Newton will pop "Meet Tim Schweig" into the correct spot in the Calendar (and set an audible alarm if you like). You can drag information from any of the three data files to another file; there's a simple filing system for organizing notes into folders, and you navigate the folder system as if the Newton were a miniature Mac.

The Connection Kit, besides offering a delivery method for system updates and third-party software, enables you to archive your Newton information for backup, enter data at a real keyboard, and synchronize your desktop files and Newton files. This last function is important to the real business use of the Newton, and will be especially so when version 2.0 ships, allowing direct import of files from other applications. The point of handwriting recognition is not to allow you to scribble in 400 names, phone numbers, and addresses—the point is to let you make easy, small additions and modifications to your main desktop contact database and your calendar when you're away from your desk.



Keeping in Touch Connection Kit 1.0 lets you enter basic files, such as name lists and phone numbers, and notes at a Mac keyboard for downloading to the Newton.

Hard Wear

Since the Newton isn't really at its best as a free-standing Filofax replacement but rather as a portable window on the data in your larger computing environment, the Newton Fax/Modem is an important part of the picture (users report that other v.32bis fax modems also work with the Newton). With the fax modem (2400-bps modem, 9600-bps fax) you can currently send out documents from the Newton, and Newton's own E-mail facilities are scheduled to be set up by the end of the year. E-mail, messaging cards for the PCMCIA card slot in the top of the Newton, and wireless fax modems under development will allow business documents to slosh back and forth between business offices and Newtons out in the field. For now, the fax modem performs adequately, generating a nice cover sheet if required. Received faxes print somewhat smaller than the standard page, but the Newton's fonts generate a crisp, businesslike message.

The Newton's future as a mobile business partner may be compromised at the moment by battery problems, a theme familiar to PowerBook users. Curiously, I got nearly a week of use, 3 to 4 hours a day, from a set of alkaline batteries, but the battery indicator showed NiCad rechargeable packs running down to 50 percent after 2½ hours. This is a crucial parameter because the Newton appears to lose IQ points when the batteries run down—recognition takes longer and accuracy decreases.

The batteries also run down faster when the Newton drives a printer (I used an Apple Personal LaserWriter 300) or writes to a PCMCIA flash-storage card (the Newton 2MB card). A bigger, better battery solution is needed if travelers are going to use their Newtons with portable ink-jet printers, and flash storage is also critical because the stock Newton offers just 250K of free RAM.

Summary

In a few months, brave pioneers will introduce software to make the Newton useful far beyond the DayTimer/Rolodex/portable-fax level (for a list of Newton software in the works, see *News*, in this issue). Software now being demonstrated includes special calculators to augment the Newton's basic calculator and financial formulas, a spreadsheet, student-records software for teachers, listings and loan-calculation software for Realtors, expense-report and sales-contact software for business purposes, and accounting/time-billing software for professionals. For these applications, the fact is, the Newton is perfect. To single out just one, the Newton will be the greatest handheld calculator the world has ever seen, with pen entry of numbers and the computing scope of a small Mac. And if someone fabricates a decent battery pack, a Newton/messaging card/portable-printer combination will be the least obtrusive and most helpful piece of technology ever offered to Realtors. It won't, in contrast, revolutionize life for the journalists who have expressed their dissatisfaction—if an editor wants 2000 words tomorrow, it's time for a PowerBook, not a Newton. Although Apple released the Newton about four months early, and marketing claims led to mistaken expectations about the details of handwriting recognition, the Newton MessagePad is an intelligent piece of work with an impressive variety of serious business uses.—CHARLES SEITER

NEWTON SECRETS

The Newton isn't a Mac, but Apple's team is up to its usual tricks. Here are three of the surprises they've buried in the MessagePad.

- Hold the stylus tip steadily on the clock icon at the bottom of the Note Pad screen. You'll be shown the internal temperature of the Newton.
- Write **About Newton** and tap Assist. There are the names of the Newton designers . . . and what a font!
- Tap the Find button. Enter **Elvis.** Tap All. The Newton will tell you, and show you on the map, where the King was last seen. (It's different every time.)

—David Pogue

The most complete hand scanning system you can find in a box. Or a store. Or in town. Or in the world for that matter.

Quickly scan text and images into your computer with the OmniScan 256 grayscale scanner. OmniScan produces true 8-bit grayscale at 400 dpi and features advanced illumination technology and solid tracking for the most accurate scanning.

With OmniScan, you can send, receive, OCR, and compress faxes right from your computer using Caere's FaxMaster technology. All you need is a fax modem. OmniScan does the rest.

Scan directly into any application with OmniPage Direct. Direct employs Caere's AnyPage technology to provide the most accurate OCR possible. Font sizes, styles, and formats are no problem for OmniScan Direct's OCR.

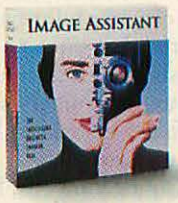


Image Assistant GS makes grayscale image editing and enhancement a snap. The "Assist Mode" displays sample image variations right on your computer screen. All you have to do is choose the one that works best for you. And to help you add your own personal touch to images, Image Assistant GS features a complete set of editing tools and features.

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Circle 69 on reader service card

Finale 3.0.1

Music-Notation Program

PROS: Comprehensive; interface improved over previous versions; exemplary documentation.
CONS: May be too complex for some users.
COMPANY: Coda Music Technology (800/843-2066). **LIST PRICE:** $749.

MW ★★★★

FINALE WAS THE FIRST MACINtosh product to perform all the functions of musical composition and publishing, from input to playback and part extraction—a revolutionary accomplishment heralding the birth of a new product category. But it burst on the scene in 1988 to mixed reviews. Back then, a program that required a manual was considered an apostate that veered from the True Macintosh Path. People objected to Finale's learning curve and its confounding array of nested dialog boxes.

Coda Music Technology quickly set about clearing up the program's problems. After five years and several versions, the result is Finale 3—the new standard against which all other music-notation products must be judged.

Since version 2, Finale has come with great documentation. Version 3 boasts three superb volumes—nearly 1000 pages—printed on recycled paper. The *Installation and Tutorials* volume is the best I've ever seen for a piece of software this complex. The tutorial exercises make third-party exercise books unnecessary. The two other tomes organize the material by musical terms and by program functions. The index at the end of each book wisely covers all three volumes, and the visual index tells you what to look up even if you don't know the name of some musical squiggle or doodad.

A 1988 veteran of Finale would scoff in disbelief to hear this, but Finale's program interface is splendid. Gone are the nested dialog boxes, the hidden clicks, the ridiculous asterisked text buttons. Instead there's a floating, reshapable tool palette; online help everywhere; and convenient controls for navigating measures, pages, and staff layers.

The program is 32-bit clean, balloon-help rich, background-processing happy, with technical help available by phone, fax, CompuServe, and America Online. Finale has always come with a free PostScript music font; now you get a TrueType version too. (Unlike in any other program, you're free to substitute Sonata, Crescendo, or any other font you prefer.)

Some of the new features are potent. The number of windows you can have open is limited only by your computer's RAM. You can view different scores, different portions of the same score, a full score and extracted part, or all of the above simultaneously. Playback controls and MIDI instrument assignments have been elegantly simplified. You also get a library of 35 templates, from lead sheet to full orchestra. It's like having a music paper emporium on your hard drive.

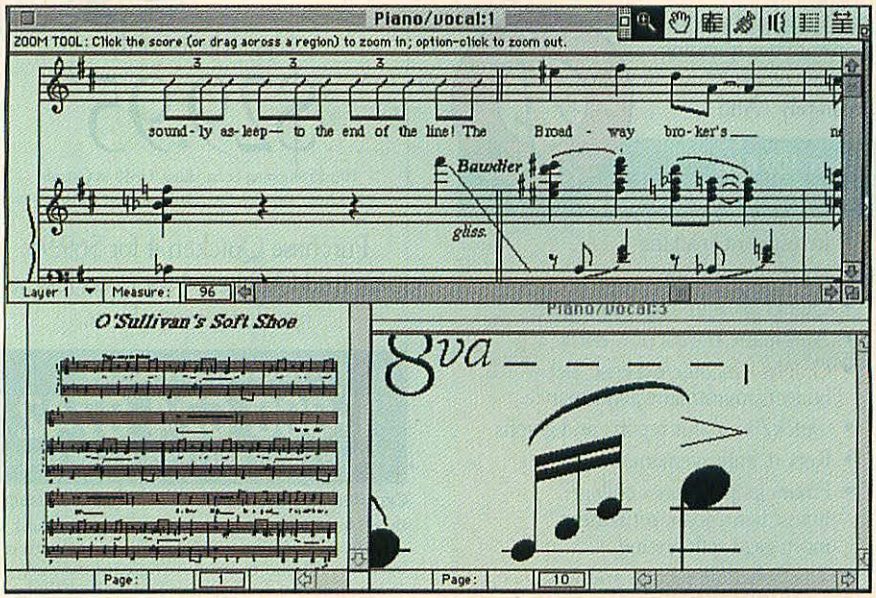
Most dramatically, however, Finale 3 offers something called Smart Articulations. These are musical markings—accents, staccatos, fermatas, and the like—that jump into place on the note you click, perfectly centered, perfectly distanced, and (if you wish) placed to avoid overlapping the staff lines. Furthermore, these markings move as their associated notes move, and even flip upside down if the stems change direction. (Yet, unlike in rival programs, you're still free to move markings anywhere you wish.) The improved Mass Mover tool makes it easy to add articulations to groups of notes—and, because this tool can now select partial measure, its usefulness is quadrupled.

The Shape Designer, Finale's built-in draw program, has been completely overhauled. You use it to make up your own musical symbols, such as harp pedal diagrams and little "watch me!" eyeglass icons. The new Shape Designer is a mini-MacDraw, easy enough for a child to use.

The manual covers over 75 other enhancements, new features, and interface improvements. All of this joy doesn't come without a price, however. Users of the initial 3.0 release were distressed with its nasty bugs; many users scurried back to Finale 2 until Coda sent the cleaned-up 3.0.1 version to registered users. MusicProse (Coda's midrange music program) and Finale for Windows can't open Finale 3 files. Until those programs are similarly upgraded, converting their documents to Finale 3 format is a one-way street. And worst of all, Finale 3 is slower than its predecessors, making use on a Mac Plus hopeless and on an LC II impractical for anything but small scores.

So, as with any professional product on the Macintosh, think carefully before buying; while Finale makes the mechanics of composition easier, it won't make you a composer, an arranger, or a copyist. If your needs don't merit the investment in time, money, and training, consider an intermediate-level program such as MusicProse (which has un upgrade path to Finale) or Passport's Encore.

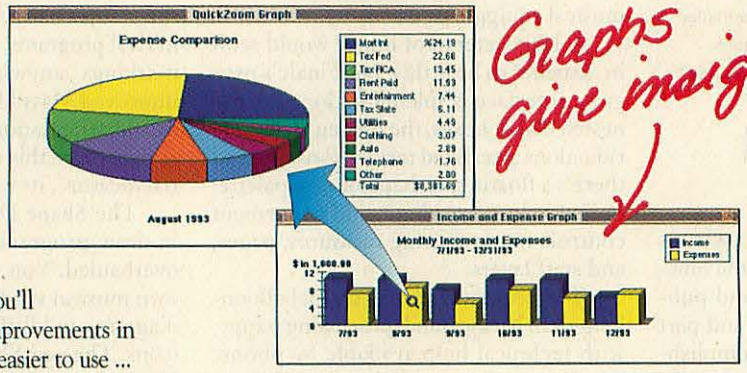
On the other hand, Finale still does what it's always done best—turning your live keyboard performances instantly into standard sheet music; printing gorgeous scores; converting MIDI files from your sequencer program into standard notation—and it's now infinitely more pleasant to use. It's still the only program that uses calibrated width tables for spacing the notes of the music; still one of the few to let you freely move or resize any musical element, from a single note to the entire score; and still the one least likely to limit your notational ambitions, no matter how bizarre. If you find you have high-end needs for notation, no product on the market can match Finale stride for stride. Yet.—RICHARD FENNO



Multiple View One of Finale 3.0's many improvements is simultaneous views of the same score or different scores, limited only by your computer's RAM. Here, the same score is shown in page view (lower left), normal size (top), and zoomed in (lower right).

New Quicken 4 will radically improve your financial organization in minutes.

There are over 4 million people managing their finances ... tracking their investments ... even running their small businesses with Quicken. So we knew an upgrade would have to be good. Really good. That's why you'll find over 100 important improvements in Quicken 4. Now it's even easier to use ... saves you more time ... and does much more. And it's still one of the best bargains for your Mac.



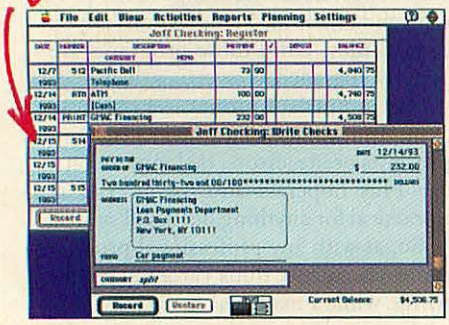
Graphs give insight

QuickZoom™ shows you the numbers behind the numbers — from a spending category to an individual transaction — with just a double-click of your mouse.

Quicken 4 means business

Quicken 4 doesn't stop with personal finances. Our new Business User's Guide will show you how Quicken 4 can handle things like tracking projects by job or client. Accounts payable and receivable. And, of course, expense tracking and allocation.

As easy as your checkbook



Quicken 4 is easier

If you can use a checkbook, Quicken 4 is a no-brainer — you can use Quicken 4 without ever opening a manual. And because Quicken 4 categorizes all your spending — and income — you'll see at a glance where your money goes.

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Turbo 040

Accelerator Card

PROS: Good performance; three-year warranty. **CONS:** Expensive. **COMPANY:** DayStar Digital (404/967-2077). **LIST PRICE:** $1899; adapter card $119.

MW ★★★

A YEAR AGO, AN ACCELERATOR CARD with the performance of the 40MHz Turbo 040 would have been a success even with a hefty price tag. Nowadays it's a lot tougher to justify spending $1899 (plus $119 for the adapter card, if required) to upgrade obsolete systems like the Mac IIci or the IIcx. With the current CPU price cuts and Apple's 33MHz Quadra 650, upgrading to a faster Mac seems to be a better choice.

The 40MHz Turbo 040 is equipped with the fastest 68040 processor available today—the same one used in the new Quadra 840AV. The new board has the same design as the other Turbo 040 boards from DayStar (the 25MHz and 33MHz versions). But unlike its slower siblings, the 40MHz version comes standard with 128K of secondary cache to boost performance. The 68040 processor already has two built-in caches, one for instructions and one for data. But due to their small size—4K each—the CPU cannot avoid frequently accessing the motherboard memory for instructions or data. If a secondary cache is available, the processor will look there for instructions or data before accessing the slower motherboard memory. While the secondary cache (also called static RAM) is not as fast as the built-in cache of the 68040 chip, accessing and retrieving information from the static RAM is still a lot faster than going to the motherboard memory. Macworld Lab found up to a 50 percent performance improvement with the secondary cache turned on.

As our benchmarks show, the 40MHz Turbo 040 was at least as fast as, if not faster than, the fastest Mac available, in processor-intensive routines such as recalculating a spreadsheet, sharpening a Photoshop image, and finding and replacing words in text. However, when it came to disk- and video-intensive routines, the Quadra 840AV, 800, and even 700 performed much better than the Turbo-equipped IIci. The slower SCSI port and video on the IIci gave the Quadras the edge on overall I/O performance. To get a IIci equipped with a Turbo 040 to achieve the video and disk performance of a Quadra, you need a faster video card and a SCSI accelerator—rather costly additions. When we tested the Turbo 040 with the IIci's internal video, the overall speed of the Turbo 040 was a bit slower than that of the Quadra 800. Using an E-Machines ColorLink card instead of internal video, the Turbo 040 was slightly faster than the Quadra 800.

Installation of the Turbo 040 is straightforward. For IIci, IIvx, or Performa owners, simply open up your CPU's cover, find the Processor Direct Slot, and insert the board into the slot. For other CPUs, you will need the $119 adapter card from DayStar. When you boot up your Mac, instead of the usual happy Mac, you'll see one with a tiny Turbo 040 across it, which tells you the board is up and running. To activate the Turbo 040 and manage the cache, you use the QuadControl control panel. The AutoCache lets you tailor your Turbo 040 for different applications. For example, you can set up the Turbo 040 to turn off its cache if your application doesn't support the 68040's Copy Back cache mode (the fastest mode) and turn it back on when you quit the application. It also has a feature called Enhanced PowerMath that speeds up mathematical operations by trapping SANE calls and redirecting them to the 68040 floating-point unit.

As with other DayStar products, we experienced only minimal compatibility problems. The DayStar Turbo 040 is currently the only 68040-equipped board that supports virtual memory—not exactly an easy engineering task, since it involves patching some of Apple's memory-management routine. There is a minor bug when virtual memory is turned on, however: the AutoCache feature is disabled—a nuisance if you have applications that don't support some Turbo 040 options. You can manually deselect these features, though. And as is true for other 040 cards, you won't be able to use A/UX with your Turbo 040 card.

The documentation includes detailed color photos that guide you through installation. The Turbo 040 carries a product warranty of three years, plus a toll-free tech-support line and an upgrade path for moving up to future products.

DayStar usually delivers accelerator products with excellent performance at reasonable prices. This time, however, its Turbo 040 seems overpriced. DayStar has indicated that as the 40MHz 68040 chip becomes widely available, the price of the chip will drop, in turn leading to cheaper boards. But for the time being, trading up to a faster Mac seems a more logical solution.—MARK HURLOW

MW LAB DayStar 40MHz Turbo 040: How Fast Is It?

CORE-PERFORMANCE INDEX

Times as fast as a Classic (Classic = 1.0).

Use these standard ratings of overall performance, based on a core test suite, to compare systems across classes.

Best result in test. Products are arranged in decreasing order of overall performance.

	Common	Scientific
	Typical business tasks in Microsoft Excel and Word that use the Mac's processor, drives, and video display.	We added to the common tasks several scientific calculations that use floating-point math.
Mac IIci with DayStar 40MHz Turbo 040 [A]	17.4	32.1
Macintosh Quadra 840AV	16.5	28.8
Macintosh Quadra 800	16.4	26.8
Mac IIci with DayStar 40MHz Turbo 040 [B]	15.9	27.9
Macintosh Quadra 650 [C]	14.6	24.9
Macintosh Quadra 700	11.9	19.4
Macintosh IIci	4.9	9.2

BUSINESS-SYSTEM PERFORMANCE TIMES

Times are in seconds. Shorter bars are better.

Use these results to compare the performance of systems for different types of real-world business tasks. The results can be compared with any other *Macworld* Task-Performance Times for Business Systems.

	Processor	Drive-Access	Video-Display	Floating-Point
	Several tasks in Adobe Photoshop, Aldus FreeHand, Microsoft Excel and Word, Claris FileMaker Pro, and QuarkXPress.	File open in Adobe Photoshop, Microsoft Excel and Word; and disk-based sorts in Claris FileMaker Pro.	Vertical scrolling in Microsoft Excel and Word, and QuarkXPress.	Scientific recalculations (which use floating-point math) in Microsoft Excel.
Mac IIci with DayStar 40MHz Turbo 040 [A]	116.4	61.5	66.0	14.7
Macintosh Quadra 840AV	118.1	59.2	49.1	17.5
Macintosh Quadra 800	129.1	54.1	52.0	19.1
Mac IIci with DayStar 40MHz Turbo 040 [B]	128.2	64.3	76.5	17.3
Macintosh Quadra 650 [C]	136.4	57.4	52.8	20.5
Macintosh Quadra 700	172.3	62.8	73.1	26.3
Macintosh IIci	467.2	111.0	173.4	52.6

All Macs, except the Quadra 650, were tested with 16MB of RAM. [A]Tested with E-Machines ColorLink Video Card. [B]Tested with internal video. [C]Tested with 8MB; with 16MB of interleave memory, results should be on a par with those of the Quadra 800.

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Circle 14 on reader service card

Two 35mm Slide Scanners

Film Scanners

Coolscan LS-10e

PROS: Accommodates loose film; variable focus; excellent image quality; quiet operation. **CONS:** Verbose documentation. **COMPANY:** Nikon Electronic Imaging (516/547-4200). **LIST PRICE:** $2600; internal model $2300.

MW ★★★★

ScanMaker 35t

PROS: Accommodates loose film; fast scanning. **CONS:** Weak software. **COMPANY:** Microtek (213/321-2121). **LIST PRICE:** $1999.

MW ★★★

MICROTEK'S SCANMAKER 35T AND Nikon's Coolscan LS-10e are desktop scanners for working with 35mm film. The toaster-shape ScanMaker measures about 7⅛ by 7¼ by 1¼ inches. The Coolscan comes as an internal model that fits into the drive port of the Quadra 900 and 950, the Centris 650, and the IIvx, and as an external unit (reviewed here) that measures 5¾ by 12⅞ by 2 inches.

These scanners look like very simple devices. Each has SCSI-address controls located conveniently on the rear panel and status lights on the front. Both scanners are principally for handling mounted 35mm slides, but they also come with holders for loose film. The ScanMaker's holds more and is easier to use than the Coolscan's. But the Coolscan's holder is sturdier and holds the film flatter.

Inside, the two differ more significantly. Like most desktop scanners, the ScanMaker uses a fluorescent light source, which needs to warm up for optimal performance. The unit also has a cooling fan, which produces moderate levels of noise. The Coolscan, in contrast, uses a three-part LED light source with one LED each for the red, green, and blue light required to create a color image. This has the triple advantages of being cool, needing no warm-up, and since it needs no fan, after a few minor start-up sounds being as noisy as the average rock.

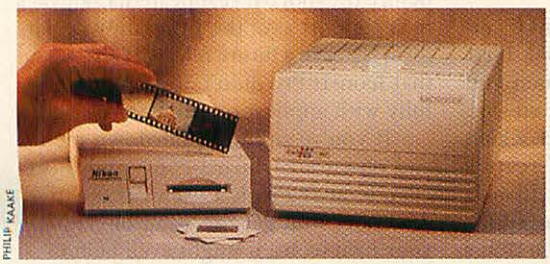
The most notable difference between these two devices is in their software controls. In addition to plug-in filters that let you scan directly into Adobe Photoshop, both scanners come with simple stand-alone modules that provide preview scans, a cropping tool, and controls for resolution and image size, brightness and contrast, gamma curves, and histograms. The ScanMaker also comes bundled with Photoshop Limited Edition.

In design and implementation the Coolscan software has a slight edge. For instance, its preview scan is much larger and faster than the ScanMaker's, making it easier to see what corrections an image may need. The ScanMaker's preview is only about the size of a 35mm slide, and the zoom tool magnifies only details. The ScanMaker's preview also takes about twice as long as the Coolscan's—about 2 minutes and 15 seconds on average.

The Coolscan software's nicest touch is its real-time focus mode. Zoom in on an area in the preview and the scanner rescans to magnify it, not enlarging the pixels but giving you more of them. Then you use a dial on the scanner to adjust the lens inside the scanner. The image is rescanned and refreshed every few seconds, so you see results instantly. In a second focus mode, the preview doesn't change as you adjust the knob; instead, a slider bar indicates graphically and numerically the precise degree of focus.

Choosing between these two film scanners comes down to deciding whether you value speed over (unedited) image quality or vice versa. The ScanMaker delivers a good image, though tending toward a slight yellow cast and flat exposure (easily mitigated by skilled use of a good image processor). The Coolscan produces remarkably true images, with good detail and color rendition and no noticeable bias toward any single color. On the other hand, even at its slowest setting the ScanMaker delivers a finished image in about half the time of the Coolscan (it scanned a 5MB file in about four and a half minutes; the Coolscan took about eight). Being biased toward publication, I prefer the Coolscan. For a few extra dollars it delivers an image good enough for applications such as newsprint publications and some types of catalogs.

—MATTHEW NIELSEN



PHILIP KAAKE

Nikon's Coolscan LS-10e (left) and the Microtek ScanMaker 35t

Now Compress 1.0

File-Compression Program

PROS: Good compression performance, both in size and speed; Inspector gives excellent control. **CONS:** Doesn't read StuffIt Deluxe or StuffIt Lite files. **COMPANY:** Now Software (503/274-2800). **LIST PRICE:** $99.

MW ★★★

SOMETIMES BEING LATE TO THE party pays off, as it has for Now Compress. The program saves hard disk space by compressing files transparently or on demand and by creating archives. Now Compress includes the best features from the market leaders, including Fifth Generation's AutoDoubler and DiskDoubler, and Aladdin's StuffIt SpaceSaver, plus some unique features.

Installing Now Compress gives you a new menu in the Finder and a control panel for settings. All operations are handled from the menu, including compression and decompression, archiving and de-archiving, and creating self-extracting archives. You can also mark files or folders to be excluded from compression. Now Compress comes with three small applications—Archive Now, Compress Now, and Expand Now—that allow you to compress or expand items under System 7 by dragging and dropping them onto icons in the Finder. Expand Now is freeware that you can give to anyone who needs to expand files and archives created with Now Compress.

The program compresses files in memory, then verifies the compressed copy before replacing the uncompressed version. While AutoDoubler changes the icons of compressed files, Now Compress does not; the only way to tell if a file has been compressed with Now Compress is to view the file in the Inspector window.

Inspector is a feature unique to Now Compress that lists all the files and folders on your disk, along with their status. It tells you the uncompressed and compressed sizes for files and folders, and the size percentage saved by compression. You access Inspector from the Now Compress menu, and you can control all of Now Compress's compression and archiving features through a button bar at the top of the Inspector window.

Now Compress compacts files using two methods—Faster and Smaller. As you might expect, Faster mode is a bit quicker, but it doesn't crunch files quite as tightly as Smaller mode. In most cases,

continues

it makes more sense to use Faster, as Smaller gives only small advantages in size. For example, a 215K uncompressed Excel file was squashed to 99K using Faster and to 86K using Slower.

Macworld Lab tested Now Compress's compression speed and efficiency against AutoDoubler and StuffIt SpaceSaver, using 24 files from 7 different applications. Now Compress crunched most files a few percentage points tighter than did the competition but was a little slower at opening compressed applications and documents, usually by a few seconds. The extent of Now Compress's extra compression, while measurable, wasn't very large; for example, on our database test file, AutoDoubler compressed the file to 54 percent of its original size, while Now Compress crunched the file to 48 percent. All of the compression products showed significant slowdowns in launching compressed programs and files over their uncompressed counterparts, but comparisons of compression products showed little practical difference in speed. The spread between the fastest and slowest products in most of our tests was about ten seconds. I found that switching to Now Compress from AutoDoubler did not perceptibly slow my Centris 650 or PowerBook 140.

The Settings control panel allows you to set the volumes that will receive idle-time compression, the amount of time the system will wait before compressing, and the amount of time a file must remain unmodified before it's compressed. You can set compression to occur only between certain times of the day (or at system shutdown), and exclude items from compression by label, location, type, or creator. By default, the System Folder and its contents are not compressed. You can also set several preferences for archiving, and pick user-defined hot keys for most Now Compress functions.

The Convert function decompresses files previously compressed in AutoDoubler, DiskDoubler, Compact Pro, StuffIt 1.5.1, and StuffIt SpaceSaver and converts them to the Now Compress format. Now Compress cannot read StuffIt Deluxe or StuffIt Lite files, so you need to decompress these files with the freeware StuffIt Expander.

Now Compress is a good product. At press time, Now Software was finishing up a free maintenance release that fixes minor bugs and improves compatibility with some applications, mostly disk utilities. As a late entry into the crowded compression market, Now Compress holds its own; it is easy to use, complete, and it compresses as well as or better than other options.—TOM NEGRINO

Icon-It Pro 3.0.6

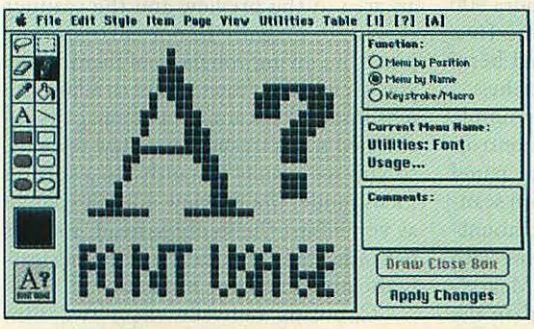
Tool-bar Utility

PROS: Flexible icon editor attaches custom tool bars to all your applications. **CONS:** Quirky interface and sometimes quirky performance. **COMPANY:** Olduvai Corporation (305/670-1112). **LIST PRICE:** $129.

MW ★★★

IF YOU LOVE WORKING WITH ICONS, you'll be in your element with Icon-It Pro. This program can attach custom tool bars to almost any application, including the Finder. The tool-bar buttons or icons represent menu-bar commands, such as opening and printing a document, or items in the Apple menu. You can choose from a library of standard icons or you can draw your own with Icon-It Pro's handy bitmap editor.

Icon-It Pro builds on the same idea as the tool bars in the latest versions of Microsoft Excel and Word, but it has much more flexibility. You create your own tool bar, choose its location and display (vertical or horizontal), and select the number and size of buttons. Also, you can specify space between the buttons and add a frame around them.



Icon-It Pro Editor The button editor allows you to attach functions to a specific icon and to customize icons using a palette of bitmap-editing tools.

Icon-It Pro comes with a one-button installer, which places an extension in the System Folder to manage the tool bars you've created, and installs the application and some additional files, including a library of tool-bar buttons.

The interface is a little clunky and multilayered, but you get used to it. First you open the application to which you want to add your tool bar. Then you launch Icon-It Pro's Switchboard, which allows you to Create or Auto-Create a tool bar. With the latter feature, Icon-It Pro builds a tool bar based on the application's menu commands. (If you don't have enough RAM on your Mac to open more than one application at once, or you're working under System 6's Finder, Icon-It Pro can create a Menu Snapshot that lets you assign menu options to buttons when the target application is not open.

Once Icon-It Pro generates the tool bar, you have to customize it because not every button will function correctly automatically. You also need to enter the icon editor to build an icon bar from scratch. You double-click on the buttons to bring up Icon-It Pro's icon editor, then link a function to the selected button. You can even link a macro to a button. If you're not completely pleased with the selected icon, use the bitmap-editing tools to change it or create an icon of your own. Icon-It Pro can also extract icons from your favorite applications and add them to your custom tool bar.

When the tool bar is complete, you attach it to the program. As your needs change, you can edit the tool bar and reinstall it in the application.

Once you get past the steps in this process, you'll find that your tool bars work pretty well. Occasionally I had to relink a button to a command to get it to perform the correct operation. When building a large tool bar and attaching it to an application, I sometimes got a message that I needed to restart the computer to accommodate the new tool bar. According to Olduvai's tech-support people, the Icon-It Pro extension loads memory at start-up based on the number of applications to which tool bars are attached. As you expand your tool-bar repertoire, memory needs may increase.

Although I didn't uncover any outright bugs, there were a few areas of eccentric behavior in addition to the ones noted above. Whenever I interrupted a screen saver to resume work in a program, the Icon-It Pro tool bar would be all black—it would take a second or two for the screen to redraw and display the regular tool bar. Also, switching from one application to another resulted in a momentary delay before the tool bar reappeared. Olduvai's tech support says the program will perform faster in a future release. I also found that Icon-It Pro didn't deal very successfully with application submenus.

If you're tired of pull-down menus and obscure keyboard-command shortcuts, Icon-It Pro is a useful alternative. And once you get the hang of creating your own icons, it might even be fun.
—GENE STEINBERG

MovieMovie

Video- and Audio-Capture Board

PROS: Provides audio and video capture on one board; 7-inch form factor; new Sony video chip. **CONS:** Mono sound input only.
COMPANY: Sigma Designs (510/770-0100).
LIST PRICE: $349; with Avid VideoShop $449.

MW ★★★★

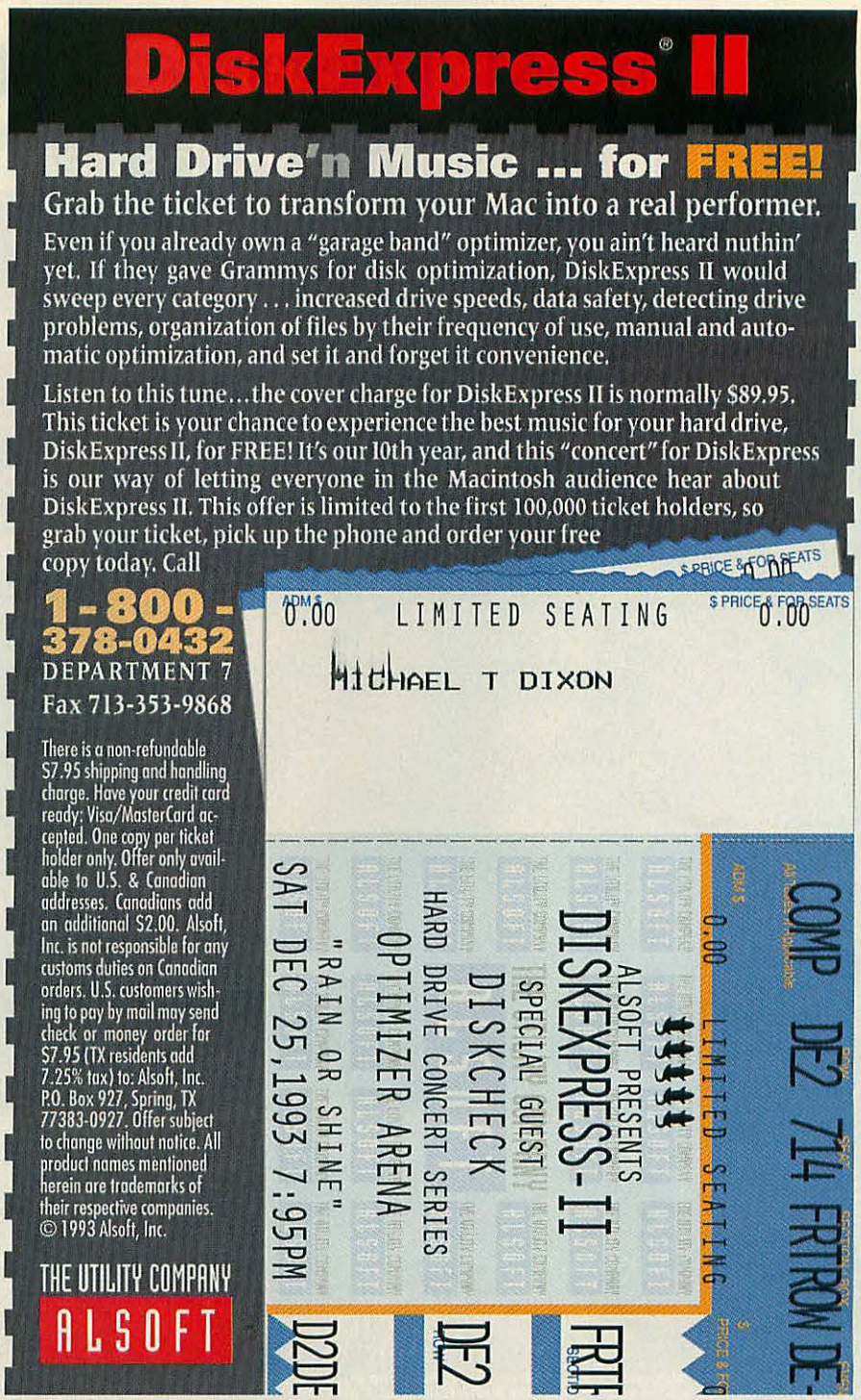
IT'S BEEN OVER A YEAR SINCE I started QuickTiming, using SuperMac Technology's VideoSpigot board to capture and then butcher my favorite scenes from the Star Trek movies. It's a fairly simple process: drop the Spigot into the Mac's NuBus slot; hook up the video and audio source; launch SuperMac's video-capture application, ScreenPlay; and start capturing. One catch: If your Mac, like my IIci, does not support built-in sound, you need a MacRecorder or other audio-input device—another expense on top of the $500 board. Sigma Designs avoids this dilemma by adding audio-capture capabilities to its MovieMovie video-capture board, at an excellent price. Unfortunately, because the board supports only mono sound, the effort may be too little, too late.

Installing the board is simple, and since it's a 7-inch NuBus board, Centris 610 owners need not be left out. On the other hand, like the VideoSpigot, the MovieMovie lacks the composite RCA video cable you need to connect the video source and the board, and you also must supply the audio cable. The board has a single female RCA connector.

The MovieMovie does come with a simple video-capture application, ScreenEdit, and QuickTime 1.6. ScreenEdit's start-up window is straightforward; three buttons let you play, stop, and record, and the zoom box in the upper right-hand corner of the window lets you change the size of the preview/record window. A floating window gives you controls for adjusting image brightness, hue, saturation, and sharpness. A second floating window provides audio gain and volume controls. The clear and concise documentation offers just enough information about QuickTime so as not to scare the neophyte. If you prefer to do all the capturing and editing in Adobe Premiere or Avid's VideoShop, Sigma Designs also provides MovieMovie Video Extension and MovieMovie Sound Extension.

The MovieMovie is the first board in its price range to use the new chip from Sony that converts the NTSC signal to RGB directly in hardware. In contrast, the VideoSpigot must first convert the NTSC signal to YUV through its on-board Philips chip and then convert YUV to RGB in software. This hardware-based conversion, along with a 512K buffer, gives the MovieMovie board a 15 to 20 percent speed advantage over the VideoSpigot. Unfortunately, you have only two sizes for recording movies: quarter screen (at around 30 frames per second to a fast hard disk or, even better, a RAM disk), or half screen (at around 25 frames per second). At full screen, you're limited to making single-frame video grabs.

If you've held out this long for an alternative to the VideoSpigot, the MovieMovie may be what you've been waiting for. The price is right, and the addition of on-board audio input is a plus, even if it is only mono. Now, should you buy this board to upgrade your Centris 610 instead of buying a 660AV? Well, that's another review.—DANNY LEE



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Circle 109 on reader service card

Useful Voice Processor for Mac 1.1v7

Dictation Software

PROS: Voice-activated recording; automatic pause on playback; adjustable sound-input level. **CONS:** Fixed-length "tapes"; doesn't work in background; susceptible to crashes. **COMPANY:** Useful Software Corporation (508/774-8233). **LIST PRICE:** $179.95.

MW ★★

WITH USEFUL VOICE PROCESSOR ON your Macintosh you can be a dictator—of the spoken word, that is.

The main drawback is that a sound file consumes about 220K of disk space per minute at a compression ratio of 6:1. At that rate, unless you have oodles of disk space to spare, you still need a tape recorder for long dictation sessions. Useful Voice Processor permits recording at compression ratios up to 12:1, but speech compressed more than 8:1 gets pretty garbled on playback. Regardless of compression ratio, Useful Voice Processor conserves disk space by not recording silences longer than 0.3 second. In fact, it disregards all sounds quieter than the threshold you set.

You control Voice Processor by clicking buttons and dragging sliders, or by means of keystrokes. The interface has some rough edges, such as a pointer that doesn't change to a wristwatch shape when you're waiting, causing you to wonder whether your Mac has crashed. It hasn't, but it usually does if you open more than two tape files without boosting the application's memory by 250K per tape. (Useful Software knows about this defect and plans to fix it.)

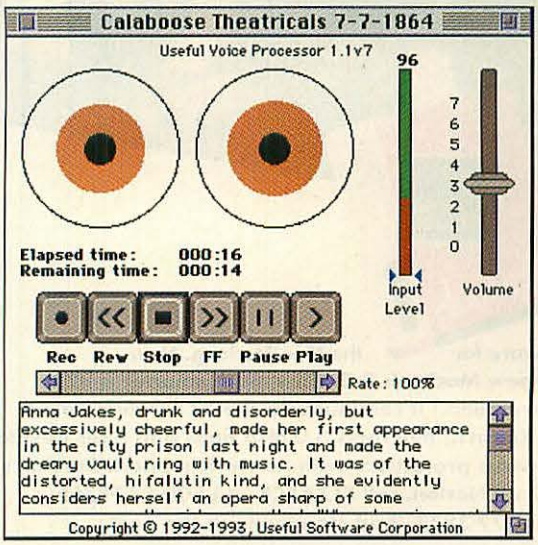
More troublesome is the fact that every tape file must be a fixed length—30 seconds or 5, 15, 30, or 60 minutes—and Voice Processor does not notify you when you reach the end. To avoid losing dictation, you must watch the Voice Processor window. Long tapes do not ameliorate this inconvenience because any unused tape takes the same amount of space as used tape. More choices of tape length would help: 30 seconds is not enough for a business letter and 5 minutes is too much.

Like a regular tape recorder, Voice Processor lets you record over a previously recorded tape without warning; but you cannot insert new dictation in the middle of an existing tape as you can with the competing product, Memorizer (see *Reviews*, August 1993). Voice Processor successfully records 30-second tapes directly to floppy disk, but loses chunks of dictation from a 5-minute tape recorded on floppy. Recording to a hard drive presents no problems.

You can play tapes back at any speed from 1 to 150 percent of normal, but to transcribe you must put them into a different mode. In transcription mode, pressing the enter key plays the segment up to the next pause, and you can move backward or forward one segment at a time, which makes transcription natural and easy.

Useful Voice Processor saves transcriptions as plain text, which you can open and format with any word processor. Too bad you can't operate the tape in the background while typing in a word processor with on-the-fly spell checking, smart quotes, and formatting.

Useful Voice Processor has what it takes to record and transcribe dictation on a hard drive, and the silence suppression and automatic pause are very useful. Yet the interface is a bit primitive and you must take uncommon care to avoid crashing. When these shortcomings are fixed, the program will be a decent value (with the caveat that sound files will still use lots of disk space).—LON POOLE



Dictator's Controls You use the controls in Useful Voice Processor's window (or their keyboard equivalents) to record your dictation on a Mac disk. You transcribe a tape by typing into the entry box at the bottom of the window while listening. Simulated tape reels gauge tape position, and a scroll bar below the tape-movement buttons governs playback speed.

Power To Go 2.0

PowerBook Utility Package

PROS: Reasonably accurate, floating-palette Power Gauge feature; on-demand and on-the-fly compression tools; convenient travel clock; decent security module. **CONS:** Lacks file-syncing capability; idle-time compression and screen saver utilities fail to monitor modem activity. **COMPANY:** Claris Corporation (408/727-8227). **LIST PRICE:** $99.

MW ★★★

POWER TO GO IS A POWERBOOK-management utility with a few unique slants that keep it above the also-ran category in this software bracket.

The Power To Go control panel includes ten modules covering different areas of PowerBook use. The compression product is none other than StuffIt SpaceSaver from Aladdin Systems, which is also available separately or as part of the StuffIt Deluxe package (see *Reviews*, August 1993).

Power To Go allows you to create custom sets of module settings, including passwords for different use patterns, such as at home and at the office, or for different users.

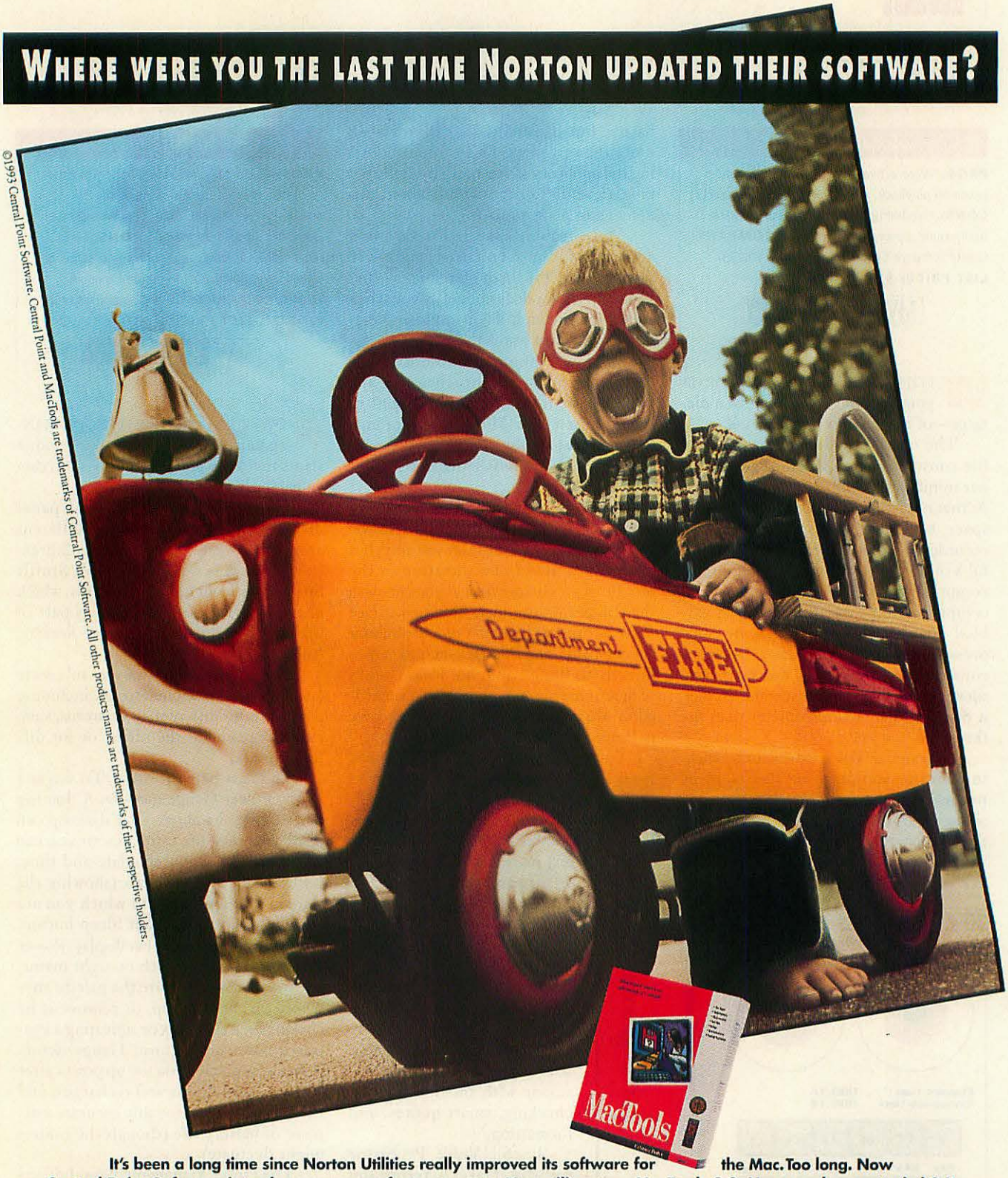
The best part of Power To Go is a handy Power Gauge module. A floating palette that sits above your desktop can display battery-life estimates, or you can configure it to show the date and time, CPU speed, a travel clock (showing the time in different cities to which you are traveling), and an instant Sleep button. Unlike the usual menu-bar display, Power Gauge doesn't encroach on tight menu-bar space. You can move the palette anywhere on the desktop, or remove it by clicking on a close box or activating a keyboard command. Power Gauge determines how quickly you use up power after a few battery drains and recharges, and then displays a reasonably accurate estimate of battery life (though the figures might fluctuate).

The Power Management module lets you set factors that affect battery use, such as hard-disk spin-down, processor rest, system sleep, and backlight dimming. To save battery power while you're on the road, you can opt to reduce CPU speed on the PowerBooks that support this feature (all of them except the 100 and the 140). You can set the options individually or on a convenient slider bar.

Power To Go also includes a decent Security module that requests your pass-

continues

WHERE WERE YOU THE LAST TIME NORTON UPDATED THEIR SOFTWARE?



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It's been a long time since Norton Utilities really improved its software for the Mac. Too long. Now Central Point Software introduces a newer, faster, smarter Mac utility–new MacTools 3.0. How much smarter is it? It retrieves accidentally trashed files in one step. (With Norton, it takes seventeen.) It continuously checks for disk corruption in the background, so small problems don't become disasters. (Norton doesn't.) MacTools 3.0 also finds and fixes Desktop file damage. (Norton can't.) And unlike Norton, it includes complete anti-virus protection, with network support. But that's just scratching the surface. For a detailed comparison of MacTools 3.0 vs. Norton, call FAXBACK at 1-800-847-8766 and ask for document 97532. For all upgrades, just call 1-800-277-3873. And stop living in the past.

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CENTRAL POINT

InfoFAX

Please see page 256 for instructions.

word under such conditions as starting up, restarting, awakening from the Sleep mode, or editing your screen saver. Password protection works even when you start with your extensions off, but you can bypass it by booting up with a floppy disk.

The remaining modules are rather undistinguished. An Airport module flashes a quick start-up message to speed your passage through airport security; a cursor finder is useful on PowerBooks with passive matrix screens; and a Menu module gives you sticky menus that can drop down with or without a mouse-click. There's also a screen saver. The Disk and Modem modules produce menu-bar displays to monitor disk and modem activity, but these two modules were nearly useless, since the displays were barely visible. High-speed modem-transfer activity doesn't seem to show up at all.

While the competition has added file-syncing capability, Power To Go is missing this feature. I would also like to see the keyboard mapping of extended keyboard functions that appears in some other PowerBook utility products.

Also included is Aladdin's StuffIt SpaceSaver, which, in combination with the Magic Menu control panel, gives you on-demand compression of files via a pull-down menu, with a keyboard command, or by appending a file extension or label, such as **.sit** or **small**, to the file name. SpaceSaver can also compress files in the background while your Mac is idle. SpaceSaver was stable in day-to-day use but a bit slow in opening compressed applications. Once applications were open, though, overall system performance seemed unaffected. SpaceSaver does need to monitor modem use more thoroughly. A few file-download sessions terminated abruptly when SpaceSaver kicked in while file transfers were active (the screen-saver module produced the same problem).

The basic Power To Go modules and SpaceSaver could be better integrated. As it is, you are dealing with two separate programs bundled in one box, and you have to telephone separate sources for support (Claris for Power To Go and Aladdin Systems for SpaceSaver). To their credit, both publishers' technical support—although not toll-free—was friendly and helpful.

System 7.1 comes with the basic tools to manage your Duo or PowerBook's performance and the PowerBook Display and PowerBook control panels. But if you want more sophisticated control of your computer's performance—and could use a handy compression program besides—Power To Go may be just up your alley.
—GENE STEINBERG

On The Road 1.1

PowerBook Utility

PROS: Automatically defers printing and faxing; automatic location setup; can reroute documents to different printers. **CONS:** Limited printer and modem support; problems recognizing serial printers; awkward interface.
COMPANY: Connectix Corporation (415/571-5100). **LIST PRICE:** $99.

MW ★★★

YOU'VE JUST RETURNED TO YOUR office from a business trip. You log your PowerBook or Duo on to your network, then open the documents you prepared during your trip and start queuing them to the printer or fax. Eventually, you can start working. Or you can install On The Road, a handy utility that takes the drudgery out of these routine tasks.

When used in automatic mode, On The Road looks at what's hooked up to your modem and printer ports and adjusts its settings accordingly. So, for example, if you're hooked up to a network consisting of printers and other Macs, the program assumes you are at work (or another location that you've specified) and displays an appropriate icon on the menu bar. If there is no network activity, the program assumes you are on the road. You can still issue print and fax commands, but the actual printing or faxing is deferred. Now here's the best part: once you've hooked up to your network, On The Road faxes all the deferred faxes and prints all the deferred documents, automatically.

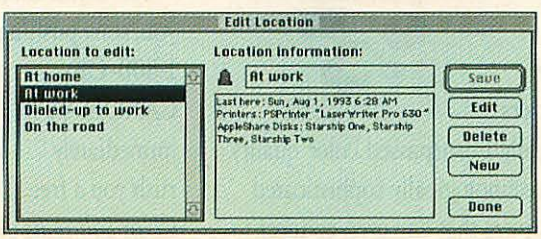
The On The Road application lets you adjust your location settings and add new locations to those already built in. Whenever you start up or awaken your PowerBook or Duo, On The Road attempts to guess your location. If it doesn't succeed, it displays a dialog box asking you to confirm where you are.

If you choose to select your location manually, you have a number of additional options. One is that you can have the program alert you that there are faxes and documents in the queue. It then lets you decide what to do with them. Another option is one of the program's niftiest features; it lets you designate which printer to send a document to (although documents queued to a laser printer cannot be sent to a serial printer, and vice versa). On The Road's queue display looks like the PrintMonitor window, but it gives you the added advantage of being able to redirect the listed jobs to a different printer if the one originally selected is busy.

You also have a set of network options, such as whether to save your password and whether to turn on AppleTalk automatically whenever you connect to a network. You can also adjust the sensitivity of its location guesses, if you regularly connect to more than one network (see "On The Road Location Editing").

If you need to change control panel settings or use a particular application at a work site, you can drop an alias of the control panel or application into the Startup for On The Road folder that the program places in the System Folder. Inside, there's a separate folder for each location. When you start up your computer in a location, On The Road automatically launches whatever aliases or programs lie in that location's folder. This feature works, but the whole process is rather awkward—it would be far more convenient to add start-up items through a dialog box.

For the most part, On The Road's detection scheme works as advertised. But it does have its quirks. One limitation is that it doesn't alter location based on the presence of a serial printer and therefore will not print automatically when the only change in configuration is the addition of a serial printer. The biggest limitation, however, is the program's hardware support. Version 1.1 limits you to Apple and Hewlett-Packard printers, and modems from Apple, Global Village, and PSI or modems that use Faxstf software. Connectix promises to add support for other devices in future versions, but for now, if your setup doesn't fit this profile, On The Road isn't for you.



On The Road Location Editing The Location Editor lets you fine-tune the location settings as well as allowing you to add or delete settings.

While everything On The Road does could be done manually, the program proves useful. And its ability to launch applications based on environment and change printers on the fly are real pluses. Although I hope for some improvements in the future, On The Road is a helpful tool for the traveling PowerBook user.—GENE STEINBERG

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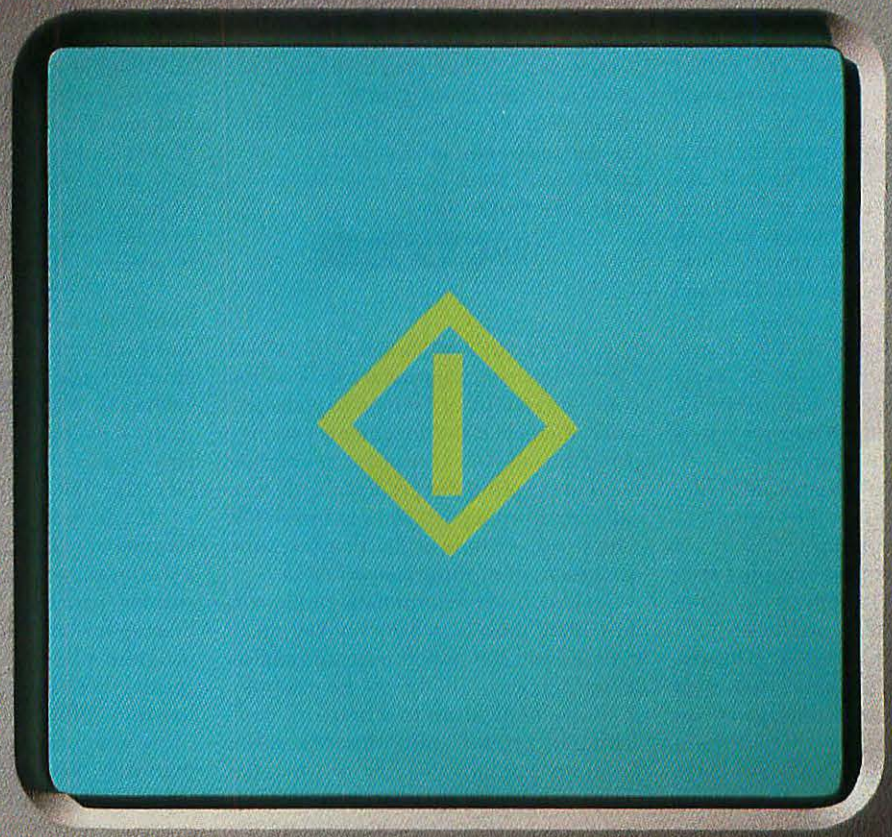

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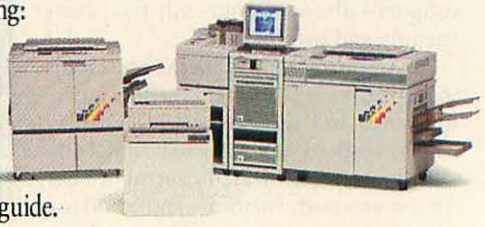

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PowerBook 140 F/25 Upgrade

Hardware Enhancement

PROS: Increases CPU speed from 16MHz to 25MHz; adds FPU for faster floating-point calculations; quick turnaround; professional installation; fully compatible; one-year warranty. **CONS:** Not cheap. **COMPANY:** Digital Eclipse Software (510/547-6101). **LIST PRICE:** $399.

MW ★★★★

POP OPEN EITHER A POWERBOOK 140 or a PowerBook 170 and you'll see that the daughterboard is marked "Macintosh PowerBook 140/170." That's right, they share the same guts, except the 140 has a set of crystal oscillators that keep the 68030 central processing unit (CPU) from running at full speed, plus an empty space where the 170 has a floating-point unit (FPU). Change the oscillators and add an FPU, and essentially you turn the 16MHz PowerBook 140 into a 25MHz PowerBook 170, minus an active matrix screen.

That's exactly what Digital Eclipse does when it installs its $399 PowerBook 140 F/25 Upgrade. (Digital Eclipse also offers a $439 PowerBook 160 F/33 Upgrade that increases the processor speed of a 160 from 25MHz to 33MHz, matching that of a PowerBook 180.)

The F/25 Upgrade is not a user-installable product; you have to send your PowerBook to Digital Eclipse. Typical turnaround time is five to seven days, and the price includes pickup and delivery (add $50 for overnight shipping).

Digital Eclipse performs a visual inspection of each PowerBook for shipping damage, then runs a set of diagnostic tests to make sure the machine isn't dead on arrival. Once Digital Eclipse determines that the machine is functional, a technician removes the daughterboard.

First, one of the oscillators on the daughterboard is moved and another oscillator is added. By simply changing the oscillators and not touching the 68030, the PowerBook runs at 25MHz, which steps the 140 up to a PowerBook 145. The increased processor speed causes additional heat, so a quarter-inch-thick piece of a rubbery compound is mounted on top of the CPU. The compound transfers heat to metal shielding underneath the keyboard. This should help prevent the heat buildup that could cause premature component failure.

Once the new oscillators and heat sink are in place, the technician carefully mounts a Motorola 68882 FPU in the empty footprint directly beneath the 68030. Although this step requires that 68 tiny, surface-mount solder connections be made by hand, the installation on my unit looks very clean, with no cold joints or excess solder slop. And since there are no cut traces or loose wires, the finished daughterboard is indistinguishable from that of a genuine PowerBook 170 board. In fact, the System recognizes the modified Mac as a PowerBook 170!

To test Digital Eclipse's claims that the F/25 Upgrade increases processor speed by 60 percent and improves mathematical computations by several hundred percent, I performed a series of benchmark tests on two PowerBook 140s, identical except for the upgrade, both running System 7.1, each with 8MB of memory and a 40MB Conner hard drive. Using Scott Berfield's Speedometer 3.23 ($30 shareware), I confirmed that the upgraded CPU does indeed run 60 percent faster than that of a stock PowerBook 140. Furthermore, Speedometer reported that Color QuickDraw graphics routines are performed 33 percent faster, and integer and floating-point calculations are two to three times quicker. The upgraded PowerBook 140 showed a weighted Speedometer performance rating 35 percent greater than before, making it more than four times faster than a Mac Classic. Finally, for a real-world test, I measured the time it took to scroll from the top to the bottom of a 469K Microsoft Word 5.1 document, as well as perform a global search and replace. Both tasks took 25 percent less time on the upgraded PowerBook 140.

The F/25 Upgrade is supposedly 100 percent compatible with all software and hardware for the PowerBooks, and my experience bears this out. I've had no problem with software or internal devices such as fax modems, memory modules, and video expansion cards. Of course, the installation voids whatever warranty may still apply to your PowerBook 140, but Digital Eclipse has a one-year warranty on parts and labor.

I am very impressed with Digital Eclipse's professionalism and the fact that the upgrade does exactly what is promised. For routine tasks, the PowerBook 140 F/25 Upgrade provides a noticeable increase in speed, but for math-intensive applications that rely on the FPU the upgrade demonstrates truly impressive gains. At $399, the upgrade seems expensive, but it's the only way to extend the viability of the PowerBook 140, and is a less drastic and costly measure than buying a new model.—OWEN W. LINZMAYER

AsantéHub 1012

Networking Hardware

PROS: Elegant design; easy to install; fits conveniently into existing network structure as well as working in a stand-alone environment. **CONS:** Some IP options can be tricky for beginners. **COMPANY:** Asanté Technologies (408/435-8388). **LIST PRICE:** $1299.

MW ★★★★

THE ASANTÉHUB 1012 IS A 12-PORT, 10BaseT Ethernet hub that works right out of the box. Asanté also offers, at an additional price, options for SNMP support ($1499) and the AsantéView network-management software ($299).

The AsantéHub is compact and efficient. The front panel has a single row of 12 ports in three groups of four, making it easy to locate a particular node. To the left of the 12 ports are three groups of LED indicators. The first two groups give a visual indication of hub utilization (bandwidth usage) and packet collision. These two groups of LEDs resemble volume-level meters on your stereo receiver. The third group of LEDs are status indicators for the nodes connected.

The rear panel provides the connection options. An RJ-21 connector lets you use a punchdown block instead of the 12 ports on the front panel. The 3-In-1 Uplink area provides the three standard connection methods: RJ-45, BNC, and AUI. Redundant links can also be established (using one wiring method as a backup for another)—this is essential in case one of the wiring methods fails. If used in a stand-alone environment, the extra RJ-45 port can be used for a 13th node in addition to the 12 on the front panel.

To test the AsantéHub, I used ten Centris 650s and two ci's, with file and application sharing turned on. I then proceeded to log on to each workstation from each other workstation (11 mounted hard drives on each desktop). By the time I mounted the drives on the seventh machine, it took about 5 seconds to display the available servers. This was the worst performance degradation I discovered, which isn't a big deal.

I also created overhead on the network by running two different operations (copy and install) *between* each Mac in four pairs of machines. After creating the overhead, I timed the transfer rate of a 1MB file from one node to another during these operations. The first overhead operation was to copy a 50MB folder containing a

continues

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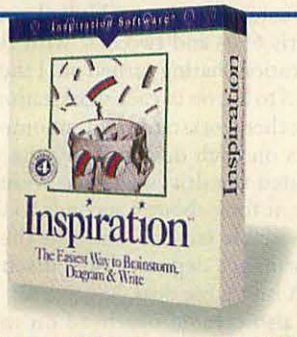

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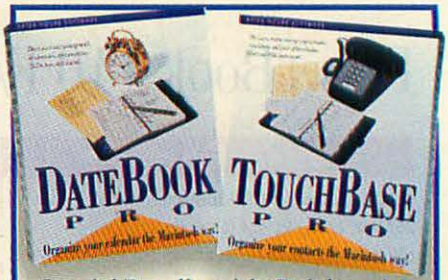

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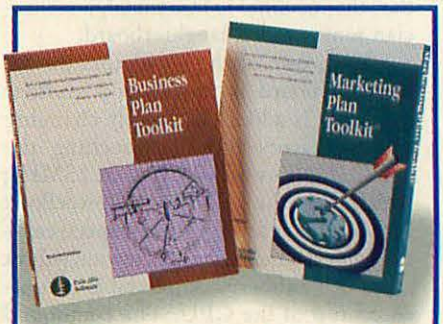

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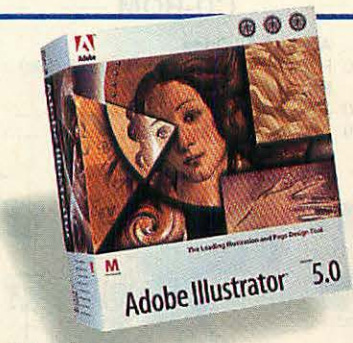

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7410 StuffIt SpaceSaver 3.4 34. 6740 Deluxe 65.
★ **Apple Computer ... 30 day MBG**
1206 At Ease 45. 7072 QuickTime Starter Kit.. 105.
1074 System 7.1 *(with free PCTV video)* ..... 79.
12654 Japanese Language Kit..... 195.
★ **Berkeley Systems ... 30 day MBG**
1502 The Disney Collection Screen Saver..... 29.
5737 After Dark 2.0x *(30+ screens!)* ..... 28.
2198 More After Dark.. 23. 2196 Bundle.. 39.
3392 Star Trek: The Screen Saver..... 34.
★ **Binary Software ... 30 day MBG**
11989 Square One 1.5.. 45. 12475 Bloopers.. 19.
Casa Blanca Works
1593 Drive7 2.3 ..... 49.
★ **CE Software ... 60 day MBG**
1727 CalendarMaker 39. 7927 QuicKeys 3.0 105.
★ **Central Point ... 60 day MBG**
10595 Safe & Sound 32. 5041 MacTools 3.0 89.
★ **Claris Clear Choice ... 30 day MBG**
11205 Retrieve It!..... 46.
★ **Dantz Development ... 30 day MBG**
9115 DiskFit Direct 1.0... 29. 3393 Pro .... 72.
5255 Retrospect.. 145. 7945 Remote 2.0.. 259.

★ **Datawatch ... 30 day MBG**
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★ **Fifth Generation ... 30 day MBG**
5342 MacPak 1.0.. 96. 3955 Suitcase 2.1.3 53.
7404 DiskDoubler 52. 4838 AutoDoubler ... 58.
12298 AutoDoubler/DiskDoubler Combo ..... 85.
10398 CopyDoubler 39. 7704 Public Utilities.. 98.
FWB, Inc.
2999 Hard Disk ToolKit 125. 7929 Personal 49.
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11193 Kai's Power Tools for Photoshop ..... 89.
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7068 INITPicker 49. 1740 Redux Deluxe 2.01 49.
★ **Kent Marsh Ltd. ... 30 day MBG**
9513 FolderBolt 71. 1839 NightWatch II ..... 89.
1725 CryptoMactic 1.01 ..... 55.
★ **Kiwi Software ... 60 day MBG**
11736 Screenscapes..... 34.
★ **Logical Solutions ... 30 day MBG**
10169 7th Heaven 67. 11191 Chameleon..... 39.
MicroMat Computer Systems
3732 MacEKG II.... 89. 2998 DriveTech.... 41.
★ **No Hands Software ... 30 day MBG**
11194 Common Ground 119. 11195 Magnet 85.
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6925 Now Utilities 4.0..... 84.95

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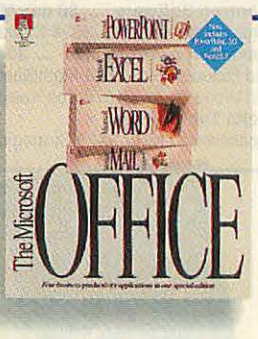

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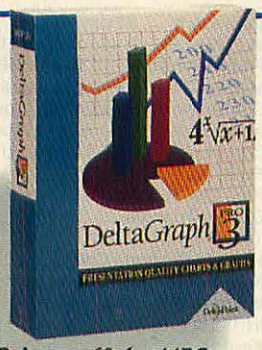

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1039 Shanghai II 19. 1134 Lost Treasures Vol. I 29.
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Carmen Sandiego Series *(CP)*..... *ea.* 29.
8285 Where/World Carmen Sandiego Deluxe 47.
11561 TRISTAN Pinball ..... 35.
Buena Vista Software
1711 Heaven and Earth ..... 34.
Bungie Software
7445 Pathways Into Darkness..... 39.
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7761 Voyager II, the Dynamic Sky Simulator.. 99.
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5910 Crossword Creator 39. 8524 Casino Master 45.
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10953 Kid Pictures 19. 2574 MathBlaster Plus 34.
7942 Kid Works 2 34. 1076 Zoo Keeper..... 34.
Delta Tao Software
2536 Spaceward Ho! or 2439 Strategic Conq. 36.

Nordic Software

7723 *Language Explorer*—The fun way for kids of all ages to learn new languages ..... **$29.**
8258 *Turbo Math Facts*—Learn the basics with this entertaining tutor..... **24.**
8257 *Preschool Pack*—Six colorful programs **34.**

★**Edmark Corporation ... 30 day MBG**
7155 Kid Desk $24. 7318 Millie's Math House $29.
1078 Bailey's Book House ..... 29.
Electronic Arts
1907 PGA Golf 38. 2805 Tournament Course 18.
Game Tek
7433 Wheel of Fortune..... 24.
Graphic Simulations
8083 Missions at Leyte Gulf *(req. Hellcats)*.... 20.
4756 Hellcats Over the Pacific 1.0.3 ..... 38.
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6693 KidsMath 2.0 or 2276 Kid's Time .... *ea.* 25.
8527 NumberMaze or 3471 DaisyQuest.. *ea.* 35.
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11188 Pax Imperia.... 44. 1562 3 in Three.. 31.
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1615 Mario Teaches Typing..... 29.95
Bridge Deluxe or Out Of This World ea. 34.
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7126 Reunion 3.0..... 119.
★**Maxis ... 30 day MBG**
11272 SimAnt..... 29. 11270 SimLife..... 29.
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3959 Word Munchers 18. 3963 Oregon Trail 28.

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1502 *The Disney Collection Screen Saver*—Incl. over 15 well-known Disney displays..... **$29.**
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5737 *After Dark 2.0x (30+ screens!)*..... **28.**
2196 *After Dark & More After Dark Bundle* **39.**

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7723 Language Explorer or 7767 ClockShop *ea.* 29.
8258 Turbo Math Facts ..... 24.
8257 Preschool Pack ..... 34.
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11562 Lemmings..... 35.
8720 Oh, No! More Lemmings ..... 29.
Software Toolworks
4619 Mavis Beacon Typing 2.0 *(CP)*..... 29.
5201 The Miracle *(piano teacher)* 339.95
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3464 Tetris..... 23. 4835 Super Tetris .... 29.
3017 Wordtris 1.0 29. 9113 Falcon Color.... 41.
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ACT, GMAT, GRE or SAT Prep ..... *ea.* 29.
Velocity
11538 Spectre Supreme 40. 11537 LAN 2-Pak 52.
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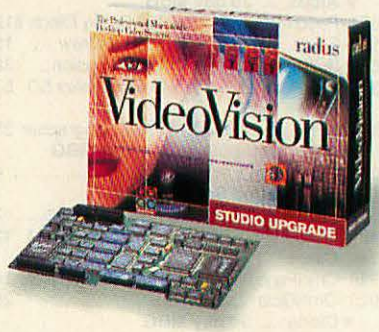
Coda Music Technology
5604 Finale 3.0..... 549.
Macromedia
7651 Action Mac 339. 5087 Director 3.1 .... 799.
4598 MacRecorder Sound System PRO..... 189.



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Nova Development
11101 Kabcom! 29. 12278 w/More Kaboom! 40.
Opcode Systems
12230 Midi Translator II.. 42. 12225 Vision.. 339.
12226 Audioshop 1.05 61. 12227 Musicshop 1.0 99.
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1738 PrecisionColor Pivot *(reqs. interface)*.. 999.
1749 VideoVision Studio Upgrade ..... 1799.
RasterOps
8944 24STV 799. 3043 Paint Board Turbo 1199.
3048 20/20 Multiscan Color 20" Display..... 1699.
Sigma Designs
1565 MovieMovie 299. 11541 ErgoView 17 1199.
Sony
10530 CPD-1430 14" Multiscan Trinitron Monitor 689.
10529 CPD-1730 17" Multiscan Trinitron..... 1149.
★**SuperMac/E-Machines ... 30 day MBG**
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7677 17" Multimode Display 999. Trade Up call
12704 20" + Color 1799. 10321 ColorPg. T16II 1299.
4720 21" Platinum Two-Display ..... 1099.
11983 Thunderstorm 469. 11982 Thunder/24 2299.
10321 E-Machines T16II Monitor ..... 1299.
9066 Futura SX... 369. 9065 Futura MX .. 649.
8028 Futura II SX 459. 8027 Futura II LX 819.
8005 Ultura LX.. 1189. 7985 EtherDock.. 639.
10322 E-Machines Presentor..... 439.

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Against All Odds
10330 From Alice To Ocean Book *(with CDs)*.. 39.
Broderbund
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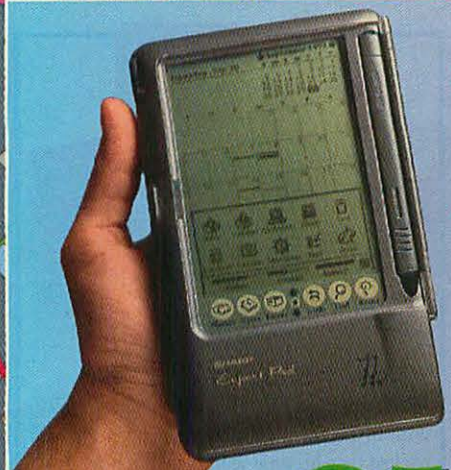

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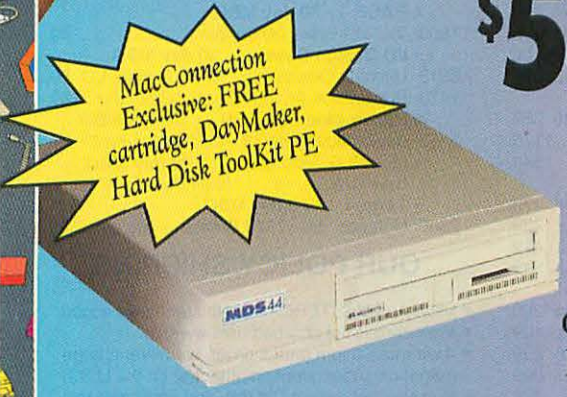

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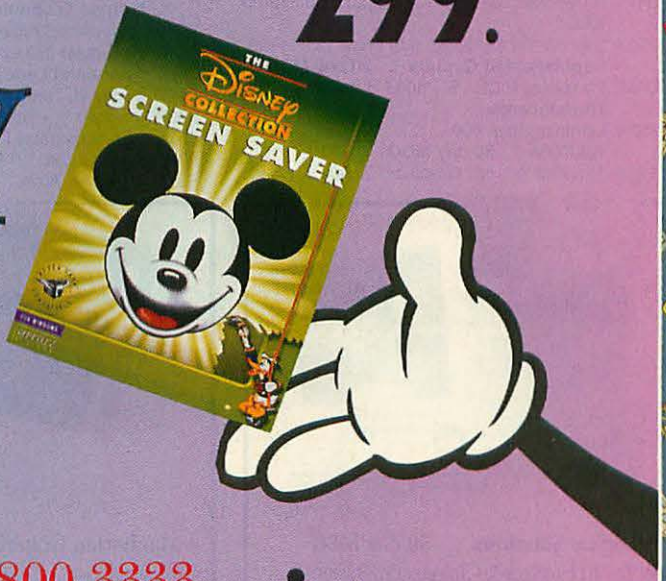

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10318 LZR 960.. 1099. 10319 LZR 965.. 1899.
Epson
8194 Action Scanning Sys. *(ES-600C SCSI)* 899.
10741 ES-800C Scan. 1199. 8219 Pro Mac .. 1399.
3052 Interface Kit for ES-600C or ES-800C .. 325.
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7970 Toner Cartridge ..... 109.
7665 DeskWriter 550C ..... 669.
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6974 Mac Pro + Kybrd. 135. 1070 TrakPro 219.
10266 TrackMate Mac ..... 95.
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NEC
2933 SilentWriter Model 95 with Fax ..... 1199.
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11987 FastCache 040 *(Quadra 700, 800, 900, 950)* 359.
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9529 PocketHammer 170 475. 2314 PH 240 559.
12011 PocketHammer 525 ..... 1175.
7991 hammer1000FMF ..... 1549.
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2467 90 MB Gold Std. Rem. Cart. *(Qty. 3)*... 289.
8781 Mac Transportable 90 PRO ..... 479.
10499 Transportable MultiDisk 150 ..... 569.
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MDS 44 SyQuest w/SW & cartridge *ea.* 299.
MDS 88... *ea.* 469. MDS 88c... *ea.* 499.
11881 MDS 120 MB Fixed Drive *(zero footprint)* 299.
11880 210 MB..... 429. 11863 540 MB ..... 899.
11963 MDS 120 MB Fixed Drive *(upright)* ..... 329.
11962 210 *(upright)* 449. 11961 540 *(upright)* 899.
Mobius Technologies, Inc.
8049 Speedster 33MHz with FPU ..... 869.
8030 Speedster 25MHz without FPU ..... 599.
Peripheral Land, Inc. (PLI)
8327 Infinity 40 Turbo 459. 11470 88/RW 44 625.
8399 Infinity 3.5" Optical Drive ..... 1149.
2864 Infinity Floptical Drive *(21 MB)* ..... 399.
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8811 1 GB Mini Array.. 2399. 8803 2 GB.. 3499.

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★Avery ... 60 day MBG
5392 Avery 5196 *(3½"-Disk Labels-Laser)*..... 29.
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11803 3½" HD Disks *(4)* Bundle ..... 49.
★I/O Design Cases ... 30 day MBG
8812 Ultimate Classic 60. 1941 Ultimate LC 89.
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Star Trek..... 14. 2694 Blue 7 x 9..... 8.
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Peripheral Land, Inc. (PLI)
12441 Multi-Session Int. CD-ROM Super Bun 599.
12442 Multi-Session CD-ROM Drive Bundle.. 649.
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7101 AppleTalk Remote Access ..... 149.
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11052 M144I V.32bis FaxModem ..... 189.
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11698 MVP144MAC with FAX ..... 189.
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8066 QuickMail *(5 user)* 279. 8067 *(10)* 399.
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12041 Safe Deposit Personal ..... 59.
DaynaPORT E: *(BNC or 10 BASE-T) ea.* 149.
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12453 DoveFax 144E.. 239. 10200 Pro+V.. 399.
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4802 PhoneNET StarController 357..... 899.
9805 Timbuktu 5.0 or 4866 Remote 3.0.. *ea.* 129.
9516 PowerPath..... 105. 9518 LocalPath 139.
6922 Replica for Mac 69. 7407 *(10 user)*.. 499.
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7889 TelePort/Bronze II ..... 95.
3418 GlobalFax Software for PowerBook Duo 79.
Hayes
10822 ACCURA 2400.. 69. 11422 96 Fax .. 209.
11419 ACCURA 144 + Fax 144 ..... 235.
2300 Smartcom II.. 84. 5971 OPTIMA 24.. 119.
3037 OPTIMA 144FAX Pocket ..... 309.
Insignia Solutions
7557 AccessPC 3.0 ..... 78.95
4089 SoftPC.. 99. 10553 SoftPC Windows.. 299.
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LANRover/8E for ARA or Netware *ea.* 2549.
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7917 Pocket Fax/Modem ..... 77.
3576 FX9624V Send/receive V.42 Fax/Modem 119.

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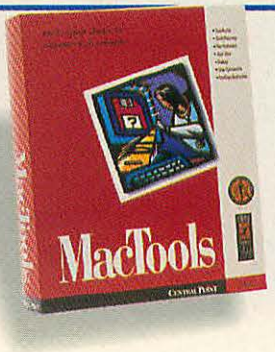

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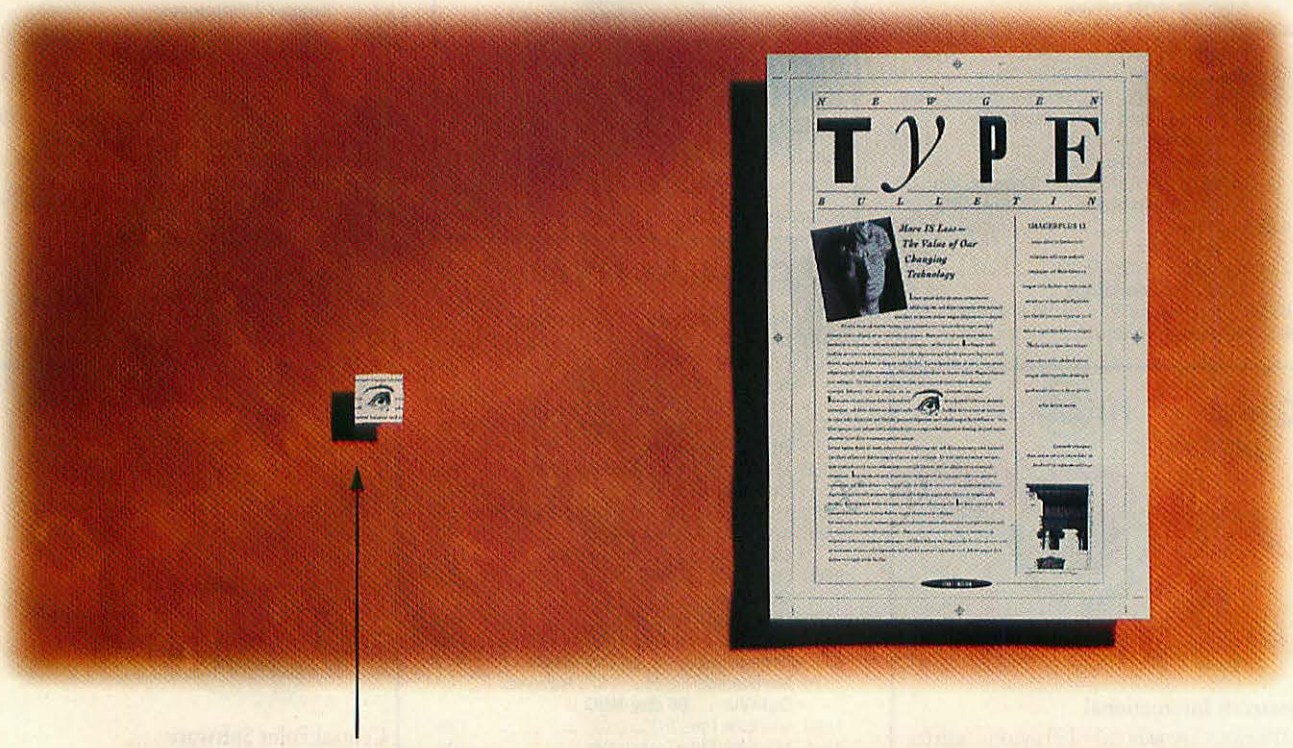

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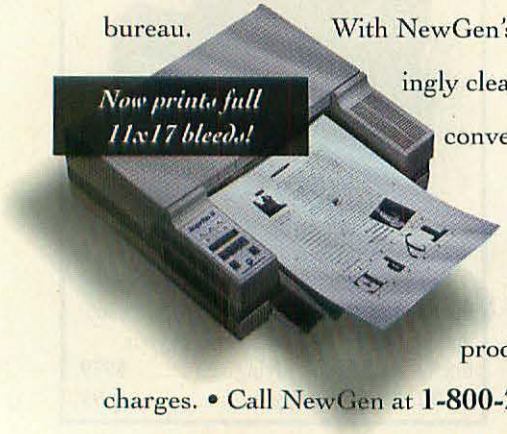

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variety of applications and files. With this overhead, the copy operation took 7.1 seconds. The second overhead operation was installing Microsoft Word over the network—the 1MB file transfer took 7.2 seconds. With no overhead taxing the hub, the file transfer took 6.8 seconds.

The AsantéView In-Band management software can manage the station as a node on the hub; with the Out-of-Band version you access your Mac via a dial-up modem line or directly connect to the hub via a serial port on your Mac.

AsantéView provides a collection of configuration, monitoring, management, and mapping options. Installation and setup is a relatively painless process. I found only one minor problem. The documentation shows the position of a DIP switch incorrectly, but Asanté tech support was aware of this and gave me the correct settings.

The best part of the AsantéView software is its graphically oriented approach to configuring the hub. For example, the port control window shows the front panel of the hub with all 12 front ports. You can use this window to monitor and configure individual port preferences. Available options include port operation (enabling/disabling), jabber correction (on/off), and polarity correction (on/off), among others.

Asanté provides an incredible time-saver for managers who don't have easy access to the hub. A window that is an exact representation of the front panel of the AsantéHub mirrors all monitoring functions of the panel. Also included in the AsantéView software is a fantastic mapping function as well as performance meters for the most complete hub-management system available.

The network manager can also use the software to poll each Mac on the net for the type of CPU, FPU, and Mac model, as well as the installed RAM and system software version. Each polled machine needs an SNMP agent installed. (Asanté will provide one for an additional charge, or you can use Apple's new SNMP for AppleTalk.)

One minor roadblock is the requirement that all machines on the hub be assigned an IP (Internet Protocol) address. The IP address gives each node a more structured addressing system so that it can be easily accessed in a multiplatform environment of PCs and Unix machines. The software has an autoaddressing feature, however, for managers who are not familiar with IP-addressing processes.

The AsantéHub is a premium device at a bargain price, and it fits into the ever-expanding Ethernet market. Asanté Corporation's great reputation continues with the AsantéHub 1012.—MATTHEW CLARK

External Speakers

Powered Speaker Sets

AppleDesign Powered Speakers

PROS: Look and sound good; can be turned up frighteningly loud. **CONS:** Bare-wire-and-terminal connections; top-heavy. **COMPANY:** Apple Computer (408/996-1010). **LIST PRICE:** $179.

MW ★★★

ACS100

PROS: Lightweight. **CONS:** Sound not particularly good; no power switch; DSP control doesn't add anything. **COMPANY:** Altec Lansing Consumer Products (717/296-2818). **LIST PRICE:** $180.

MW ★★

ACS150

PROS: Adds bass presence. **CONS:** Heavy and expensive. **COMPANY:** Altec Lansing Consumer Products (717/296-2818). **LIST PRICE:** $150.

MW ★★

FOR DOING SERIOUS AUDIO WORK, appreciating the nuances of multimedia software, or playing games, external speakers are a must. But are these speakers worth the price tag that comes with the fancy label?

AppleDesign Powered Speakers look like they're made to sit next to your Mac. They're tall (about the height of a 13-inch monitor), platinum, and curvy. Setup is a piece of cake, thanks to a clear, detailed manual, but no thanks to an unnecessary nod to high-end stereo paraphernalia. To connect the speakers to each other, you stick bare wire ends into audiophile-style lever terminals instead of more user-friendly earphone-style jacks. The speakers are sturdy, but rather heavy for road trips, and their skinny tallness makes them tippy and unstable.

Sonically, the Powered Speakers are solid. They excel at reproducing top and mid-range tones and can produce uncomfortably high volumes without noticeable distortion. If you want to hook up your portable CD player (via a pair of RCA jacks on the main speaker), you won't be disappointed.

Altec Lansing, while a well-respected name in home audio, has a few things to learn about making PC speakers. The main speaker cone sits faceup in a squat box while the tweeter flips up and down on a hinged arm. This arrangement makes sense for traveling, and the speakers themselves are light. There's also a tone control and a DSP (Digital Signal Processing) control.

But any infatuation with the ACS100 fades about the time you apply power. The sound quality isn't as refined as it should be—there's too much emphasis on the high end at the expense of the mid-range. Turning down the treble helps some but also muddies the sound. According to the company, the DSP control should increase stereo presence and add depth, but I didn't notice a difference. Also, with the volume set at a comfortable listening level, the Altec Lansings hiss noticeably, and on my test units there was an occasional low hum that didn't go away until I wiggled the cords just right. Finally, there's no on/off switch.

Altec Lansing sells a separate ACS150 subwoofer that rounds out the sharp tones of the ACS100 and gives a growly presence to a MIDI score or a quick round of Spectre, but again, overall performance is disappointing. The bass response is neither punchy enough nor loud enough, even with the ACS150's volume control turned all the way up and the speaker placed in the corner of the room. There's no power switch, and the unit is about the size—and weight—of a concrete block. You should literally weigh the small extra benefits this unit might give against its considerable heft.

Either set of speakers would be adequate for small presentations or audio production, but I would hesitate to recommend the Altec Lansing speakers until the company works out the kinks. The AppleDesign units look and sound good, but you can get similar performance and save yourself some money by shopping at a music store (but make sure to buy shielded speakers, as the Apple and Altec Lansing units are). Just remember, once you've heard externals, you will never go back to the Mac's internal squeaker.

—CAMERON CROTTY

TOM GIBSON

AppleDesign (top), ACS100 (lower right), and ACS150 (lower left) speakers

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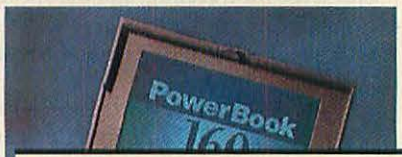

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Now Fun

Desktop Enhancement

PROS: Cheap, easy way to improve your Mac; lots of sounds; makes a picture fill the entire desktop. **CONS:** Performance sometimes sluggish; limited screen-saver modules and desktop pictures. **COMPANY:** Now Software (503/274-2800). **LIST PRICE:** $69.

MW ★★★

EVER GET TIRED OF USING THE SAME old Mac? Now Fun is a set of five desktop enhancements—all of which install as control panels—that let you customize everything from menu colors to Macintosh sounds, to liven things up.

Many of the utilities resemble shareware programs you may be familiar with. FunSounds, for example, is similar to SoundMaster, in that it lets you assign sounds to computer happenings—at startup and shutdown, when you insert or eject a floppy disk, and so on. The utility comes with almost 2MB worth of sounds, ranging from a baby's giggle to an air horn. It also reads standard System 7 sound files, so you should have no problem configuring your Mac to sound just the way you want.

FunCursors is a cousin to the shareware CursorAnimator. FunCursors lets you customize, color, and animate the Mac's standard arrow, watch, text, crosshairs, and plus-sign cursors, as well as the program's special ones—from spinning beach balls to rotating teacups. Or create your own.

My favorite Now Fun component is FunPictures, which lets you custom-design your desktop. Other programs decorate the desktop by modifying the standard System tiles. FunPictures can use tiles, but it can also cover your desktop with a single PICT, EPS, MacPaint, Startup Screen, GIF, Wallpaper pattern, or Photo CD image. FunPictures lets you crop and resize the picture to fit, although it's slow at resizing. It also monopolizes your Mac for a few seconds after start-up, a minor annoyance. Many of the patterns and pictures that ship with the program are either juvenile or dull, so be prepared to supply your own graphics.

FunScreenSavers has modules similar to those in Berkeley Systems' After Dark. In fact, FunScreenSavers can use After Dark modules, although not those from Star Trek the Screen Saver—a disappointment for Trekkies. Many of the included modules are just interesting line patterns; only a few have high-quality graphics. More modules like Night Rider, which features an animated scene of a desert motorcycle ride, would make this an excellent screen saver.

Finally, FunColors allows you to change the color of just about everything you see on your Mac—menu items, window titles, and dialog boxes, to name but a few. It's not always easy to know exactly what you're changing, and a window tinge took me a while to figure out (it's subtle). You can change colors with several applications open, but doing so noticeably slows the Mac. Even so, the module kind of grew on me. Now when I operate without it my Mac looks naked and boring.

By no stretch of the imagination can you argue that Now Fun is a true Macintosh upgrade, but it does offer some amusing and welcome changes. Consider it if you ever find yourself in a frivolous software-buying mood.—PAUL DEVINE

The World Is Easy to Find FunPictures can create a whole new world for your desktop.

Spectre Supreme

Game

PROS: Great graphics; completely addictive; can involve strategy. **CONS:** No way to save a game in progress; no way to switch to another application except when between game levels. **COMPANY:** Velocity Development (415/274-8840). **LIST PRICE:** Single player $69.95; two-pack $89.95.

MW ★★★★

IN SPECTRE SUPREME, YOU PLAY A cybertank in a cyberworld where all kinds of bad guys are trying to cyberkill you. Spectre Supreme is different from other games with the same basic plot because it's so engrossing. While it's not exactly realistic—it certainly bears no relation to anything remotely *real*—it's very believable. This is partly due to the sense of physical motion the game creates: you actually feel like you're inside the game, because what you see on screen responds in all details to your movements. Also, the Spectre world has a stark character all its own. When you play, you plunge into an intricate, mechanized future. The game's graphics make that world come alive.

In Spectre Supreme, as in the original Spectre, your goal is to pick up a series of flags and kill the tanks that are trying to kill you. When you get all the flags, you move to a harder level. Spectre Supreme offers all kinds of new twists, however: special alternate weapons, cybermud that slows you to a crawl, shields, gateways that transport you across the playing field, and other new toys. You can also increase the difficulty setting—which causes the terrain to change and the enemy tanks to get better at shooting you—and you can customize the keyboard controls. Spectre Supreme also comes with Sam's Crazy Worlds, a series of customized levels. Velocity claims it will be releasing more modules to keep the game changing.

Velocity has also added to the network game. In the original Spectre, there was only one game for networks: each person played a tank trying to kill other tanks. In Spectre Supreme, there are 13 variations, including Cyberball, which is basically tank soccer: the red team tries to knock the ball through the white team's goal and vice versa. Cyberball lacks the mayhem of some variations; in Mano a Mano, for instance, you try to kill the other players' tanks with no obstacles on the playing field. A message at the beginning of Mano a Mano says "Nothing to hide behind."

After extensive testing in our lab, the MNSTC (Macworld Network Spectre Test Crew) concluded that the original Spectre's network game is superior to Spectre Supreme's because it gives players slightly greater maneuverability and speed. However, Spectre Supreme's single-user game is definitely better than the original. The vast increase in variation far outweighs the small loss of maneuverability.

Spectre Supreme does have a couple of problems. First, there is no way to save a game in progress. Second, although the game frees you to move to another application when you complete a level, you can't pause in the middle of a level and switch applications. Also, if you're running System 7 and have other applications open, you occasionally encounter some peculiar color changes. Finally, the MNSTC complains that in team play, scores should be calculated by team and shooting your own teammates should be penalized.

Still, Spectre Supreme isn't like many other games in which a sinking boredom sets in when you realize that you can't get beyond a certain point and even if you did, it would just be a slightly more taxing but similar level. The pleasure of Spectre Supreme comes not in getting farther and farther, scoring higher and higher, but rather in the almost addictive sense of control that you get from moving that little tank around. This game is so much fun, it's even fun when you lose.—GIDEON YAFFE

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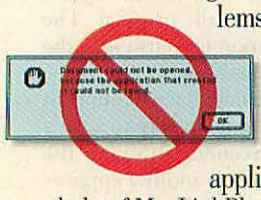

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Mr. File 2.0

Finder Utility

PROS: Copying and finding works well; easy to learn. **CONS:** A few interface quirks. **COMPANY:** Softways (408/978-9167). **LIST PRICE:** $99.

MW ★★★★

BACK IN THE DAYS OF SYSTEM 6, I relied heavily on two desk accessories: CE Software's DiskTop, which let me copy those pesky invisible files the Finder refused to see, and Norton's Fast Find, which showed a cute running person as it compiled a list of items it found. I stopped using those DAs long ago, and now I've found their replacement in Softways' Mr. File 2.0.

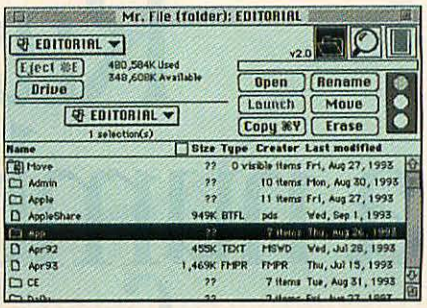
Mr. File is an easy-to-use DA that lets you maneuver around the desktop and find files. Its Folder window lets you navigate your disks and move, rename, launch, and copy files. The Find window offers search criteria, including creation and modification dates, using pop-up menus with selections such as "last 30 days." You can save the list of found items and later open it as a Mr. File file. The Selection window lets you create a list of files for easy launching.

Mr. File uses only 20K of RAM and is fairly similar to DiskTop, with one major difference: Mr. File offers background copying and finding. You can change the product's response by choosing settings such as Normal, Faster, Handling (which prevents jerkiness associated with background functions), and Turbo (which works in the foreground only). The Normal setting is described as a compromise between Faster and Handling. Mr. File also has ⌘-*key* equivalents for all major functions.

In my tests, copying a 1.3MB file from a file server to a hard drive over an Ethernet network took the Finder 23.65 seconds. Using Mr. File's Normal setting, the same task took 57.53 seconds—but it was done entirely in the background. With the Faster setting it took 22.28; in Mr. File's Turbo mode, the task took just 10.78 seconds.

Mr. File also copies files intelligently. Its version of the "Replace items with the same names with selected items?" dialog box lets you choose, for example, to replace old items with newer ones or to synchronize all copies of a file.

One of my problems with Mr. File is its interface, which provides not one but two places to select a volume (see "Getting Around"). Also, at one point, a message box flashed so quickly I couldn't read it. (I think it said that calculating folder sizes would take a while.) And while the manual is well written and entertaining, it comes in two parts, one describing an early version of Mr. File, and an update for version 2.0. You have to read the old one first and then scan the new one to find changes. My last gripe with Mr. File, though minor, is its name, which I've submitted for consideration in the All-Time Dumbest Mac Product Names Contest. The product is even referred to as "he" in the documentation.



Getting Around Mr. File's interface is easy to understand, except for a few quirks. For example, why are there two different places to select the Editorial server (top left)?

Despite its few drawbacks, Mr. File's well-designed background capabilities make it a handy desk accessory for a good price. If you can get into the habit of relying on Mr. File, your life in the Finder will move to the fast lane—leaving you lots more time to play Shanghai.—JOANNA PEARLSTEIN

Toner Tuner 1.0.3

Printing Utility

PROS: Works well; inexpensive; incredibly easy to use. **CONS:** None. **COMPANY:** Working Software (408/423-5696). **LIST PRICE:** $24.95.

MW ★★★★

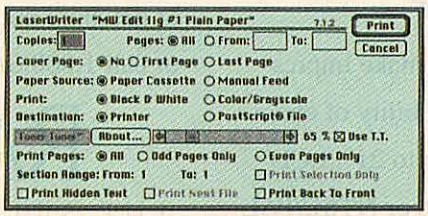
THE CRY ECHOES THROUGHOUT *Macworld*'s editorial department: "Argh! We need a new toner cartridge!" Usually at least six people report it to our MIS guy, and in the meantime editors pace and stand in line at other printers. If only we'd been using Toner Tuner.

Toner Tuner is an incredibly simple print utility from Working Software. It's an extension that lets you adjust the amount of toner applied to each print job. Normally, your printer uses the maximum amount of toner to print documents. With Toner Tuner, you can decrease the amount of toner for drafts and less important documents, using a slider bar that appears in the print dialog boxes. Toner quantity percentages range from 0.1 to 100.

Of course, decreasing the amount of toner used for a print job means that document will be lighter; a document printed at 50 percent uses half the normal amount of toner, though its appearance depends on the document type.

I printed several documents at varying percentages with Toner Tuner. Graphic images came out decently; this utility would be particularly useful for graphic artists who print several versions of a design. For text, the readability changes depending on the font. At 40 percent, thinner fonts in 12-point were hard to read, but everything else was surprisingly clear. At 60 percent, only Courier, Goudy, and Monaco were hard to read in 12-point. At 70 percent, most fonts looked as though they'd been printed on a StyleWriter's Faster setting. In all of the above cases, the larger the point size, the more legible the font.

If you want to print your documents at 100 percent, simply turn off Toner Tuner in your print dialog box or set the toner percentage to 100. Working Software tells you how to set a default percentage for Toner Tuner by altering a resource in ResEdit. This was easy to do, and Working Software's technical support was helpful.



Simplest Product on Earth? Toner Tuner adds a slider bar to your print dialog boxes so you can choose how much toner to use for the job.

Toner Tuner's percentages are slightly erratic—it gives you most but not all whole numbers between 1 and 100 to choose from. You also can't type in the percentage you want (you must use the mouse), a feature my wrists and I would appreciate.

Toner Tuner didn't interfere with any of my applications, and its list of product incompatibilities is short (there are problems with HP DeskWriter drivers earlier than version 2.2, Xante's Accel-A-Writer upgrade board, and Apple's PC Exchange). It requires System 6 or later and works on all Macintoshes.

Aside from my minuscule gripes, Toner Tuner is an incredibly useful, money-saving utility. It's hard to assess exactly how much money Toner Tuner could save a user. But, if your print percentages average 70 percent, if a toner cartridge normally prints 3000 sheets, and if your office prints 18,000 pages a year, using Toner Tuner could save you $100 annually. I suggest you only use your printer for final jobs and try Toner Tuner for your other print jobs. After all, if you can't save trees, you might at least save your toner.
—JOANNA PEARLSTEIN

RasterOps has a number of openings for Duo users.

Introducing DuoMate,™ the only docking station that opens your Duo® to a world of possibilities. With more features than any other dock, DuoMate transforms your PowerBook® Duo into a fully functioning Macintosh® workstation.

Our 16sc is also the only dock with a standard 25-pin SCSI connector for hard drive or network connections. So it works with all of your other SCSI devices without special cabling.

DuoMate is the only docking station that lets you work in color on monitors as large as 21".

DuoMate gives you more ways to make impressive presentations. It provides the flexibility of choosing an output device from monitors up to 21", LCD panels, VGA displays, RGB projectors or NTSC/PAL (RGB) monitors. All with superior color.

DuoMate 8 supports large-screen displays up to 21" in 8-bit color, and DuoMate 16sc offers the added impact of 16-bit color at 640x480 resolution.

DuoMate has been ergonomically designed with our unique docking ledge. This addition not only angles the computer for more comfortable use, it also supports and protects the Duo's connector.

So if your job entails using a PowerBook Duo, it's about time you applied for a DuoMate. There's no docking station out there with so many openings to greater productivity. Visit your nearest RasterOps dealer to see how to get more out of your Duo, or call 1.800.SAY.COLOR.

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Circle 67 on reader service card

HyperStudio

Hypermedia Authoring Tool

PROS: Supports color and many multimedia functions without scripting. **CONS:** Rough edges; limited scripting and customization features. **COMPANY:** Roger Wagner Publishing (619/442-0522). **LIST PRICE:** $179.95.

MW ★★★

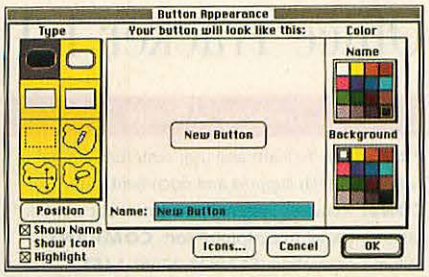
ALTHOUGH DESIGNED FOR ADULTS, HyperCard is widely used as an educational authoring tool. HyperStudio, a kid-oriented imitation HyperCard, is no mere clone. Experienced hyperhackers will find that it has many familiar features, several welcome surprises, and a few frustrations.

HyperStudio documents have the look-and-feel of HyperCard stacks, except for the presence of color. It's as easy to create a HyperStudio stack in which each card has a color palette of 16 or 256 colors as it is to create a black-and-white stack. You can paint color graphics with HyperStudio's limited but functional paint tools, or import them. You can colorize buttons and text items through dialog boxes.

Button-creation dialog boxes offer more than color; they automate many processes that require scripting in HyperCard. A few mouse-clicks create a button that can play an animated sequence or QuickTime movie, activate a self-scrolling text field, or control a laser disc or CD.

The transition from HyperCard to HyperStudio isn't completely pleasant or intuitive. The documentation is incomplete and poorly edited. The powerful HyperTalk language has been replaced by a limited version of Logo. HyperStudio offers only one card size. You cannot place buttons and other objects in backgrounds. You can record sounds but not edit them. Commands and keyboard shortcuts differ inexplicably from the familiar HyperCard versions, often violating Macintosh conventions. (For example, the keyboard shortcut for "Go to next card" is ⌘-period, which means "stop" in the rest of the Macintosh universe.)

We tested HyperStudio with a group of students and teachers in Craig, Alaska. We spent four intense days building a presentation that included drawings, animation, scanned photos, QuickTime movies, narration, and music. We created and edited most sounds and many drawings with other applications and imported them to HyperStudio to improve the quality. We also linked several smaller stacks into one large presentation to avoid system crashes. All movies, sounds, animation, and transitions were controlled by HyperStudio's unique "magic buttons"—which are automatically triggered at preset time intervals.



Button Envy Color and multimedia functions are controlled by dialog boxes, not scripts.

Even though we encountered shortcomings and bugs, we produced an impressive ten-minute multimedia documentary. While we could have produced a more professional show using HyperCard, we would have needed several more days for training, scripting, and debugging. Reaction from students and teachers was mostly positive. Some grumbled about the things HyperStudio couldn't do, but most were impressed by all that it could do.

HyperStudio offers promise as an easy-to-use authoring tool, especially for children and teachers. If the publishers clean up the interface and make the program more robust, it'll be hard to resist.

—GEORGE AND BEN BEEKMAN

MobileWriterPS

Portable PostScript printer

PROS: Fast; PostScript; easy setup. **CONS:** Heavy for a portable printer; prints best on glossy laser paper. **COMPANY:** Mannesmann Tally Corporation (206/251-5524). **LIST PRICE:** $999.

MW ★★★

THE MOBILEWRITERPS IS CURRENTLY the only battery-powered portable PostScript printer available. If you use a PostScript printer at work, using another one on the road means less document reformatting and more time savings.

The MobileWriterPS is a sturdy, PowerBook-gray box, slightly larger than a PowerBook and decidedly heavier. Setup is fairly simple, although I had to read the directions. Two latches, one on either side of the printer's top, release the cover, which then flips open. A separate metal piece hooks into place, creating a paper tray. The MobileWriterPS has an 80-page sheet feeder. Although the printer feels solid, the latches and the sheet feeder feel flimsy, and potentially breakable. A bigger problem, however, is the weight of the printer. The MobileWriterPS's 8 pounds, in addition to a PowerBook, just doesn't leave me mobile enough.

The MobileWriterPS is a thermal-transfer printer. While Mannesmann Tally claims that the printer works well on any paper, it suggests that slightly glossy, more expensive laser paper be used for the best results. Macworld Lab tests showed a noticeable deterioration in print quality from laser paper to plain paper. On laser paper the print quality was quite good, but on inexpensive bond it was barely acceptable. The thermal-transfer ribbons do offer the advantage (especially important in a portable printer) of being impossible to spill, unlike toner. Each ribbon should last approximately 150 pages, at $15 per ribbon. This is comparable to 20 pages per $5 single-strike ribbon for the GCC WriteMove II, another portable thermal-transfer printer, or a few hundred pages per $19 cartridge for Apple's Portable StyleWriter.

The MobileWriterPS is rated at 6 pages per minute for text and 4 ppm for graphics. In tests including a multiple-font document and a 20-page document using Courier, the MobileWriterPS was faster than the ink-jet portable printers we've seen. But in tests that used QuickDraw (a Claris MacDraw Pro document and an Aldus FreeHand document), the MobileWriterPS was slower than the other portable printers.

SCOTT PETERSON

Mannesmann Tally's MobileWriterPS

The MobileWriterPS comes with 35 PostScript-compatible fonts, plus Adobe Type 1 and TrueType support. It's AppleTalk compatible and emulates a LaserWriter IINT, so it's completely plug-and-play. The MobileWriterPS can print approximately 150 pages when the nickel-cadmium battery is fully charged and can keep working while the battery recharges.

At $999 the MobileWriterPS is the most expensive portable printer we've seen—the Portable StyleWriter lists for $449; the WriteMove II costs $599.

If you need a portable printer, this fast PostScript portable may save you time. But before you buy, bear in mind the trade-offs of its inconvenient 8-pound weight, fairly high price, and need for expensive laser paper.—WENDY SHARP

Office Tracker 1.1

Tracking Software

PROS: Easy to learn and use; customizable layouts; great tech support and documentation. **CONS:** Requires System 7; no automatic notification; no way to customize sort. **COMPANY:** Milum Corporation (512/327-2255). **LIST PRICE:** $195; 20 users $495; 50 users $995.

MW ★★★

PEOPLE COME AND GO, EQUIPMENT disappears, everyone is in a hurry. You try to keep on top of things, but you need help—something that's fast and efficient, and that doesn't take up too much of your Mac's memory. Office Tracker helps.

Office Tracker comes in a single-user version for managers or office assistants, and a network version for general office use. Both versions allow users to set up multiple in/out boards for different tracking needs—for example, one to log employees in and out of meetings and lunch, and one to track products checked out of the software library—or you can consolidate this information into one board. All changes of status (for example, from in to out) are made through a simple dialog box. Administrators can restrict users from signing coworkers in and out but give them access to the equipment board. The administrator can configure Office Tracker to open the same boards each time you start the program.

The network version allows each client to customize the appearance and layout of boards, but Office Tracker provides no way to customize a sort. For example, it sorts only by the first letter in the name field, so "Joe Smith" falls under *J*, not *S*.

While Office Tracker is intuitive, easy to use, and even fun, the single-user version doesn't do anything you couldn't do with pen and paper. The network version, on the other hand, is a boon for busy offices.

The network version is set up as a client-server package. The client software, Viewer, lets networked users sign in or out of the office in seconds. Clients can also set the In/Out dialog box to open at specified times. Office Tracker speeds up the process of signing in and out by guessing individuals' destinations. For example, if you sign out to lunch at noon every day, the dialog box automatically displays the editable message "out to lunch" when it pops up at noon, and "home" when you leave at 5 p.m. The dialog box also provides a pop-up list of all previously typed destinations, allowing you to select a place instead of retyping it. The problem is that you cannot rearrange or edit this list within the program. After a few months it can be faster to type the destination than to choose it from the menu.

Notify is a handy feature that automates tracking down people and office equipment. For example, any client can select the slide projector on the main board, and Office Tracker will alert him or her as soon as it is returned, by sounding an alarm and showing the whereabouts in a pop-up window. Unfortunately, you must reset the notification each time you need it, which keeps you from getting an automatic notification each morning when your boss signs in, for example. Notify works through System 7's publish and subscribe.

The program's support for Apple Open Collaboration Environment (AOCE) allows traveling client users to take advantage of AppleTalk Remote Access and track down coworkers at the home office. According to Milum, version 2.0 of Office Tracker will support AppleScript and voice annotation.

With its efficient user interface and internal organization, single-user Office Tracker can be handy for a small office. The network version lets all computing members of your office track people's locations and equipment availability without breaking a sweat. Nevertheless, someone has to sign people and things in and out—the program won't handle that for you. You still have to train your officemates or rely on a diligent receptionist.—MARISA DEFAY

Hello Music

MIDI Starter Kit

PROS: Compatible with General MIDI Level 1 and Roland MT-32; accepts external audio input; compact. **CONS:** Bare-bones software; additional hardware and software needed for MIDI composition. **COMPANY:** Yamaha Corporation of America (714/522-9240). **LIST PRICE:** $449.95.

MW ★★★

WHEN YOU TAKE YOUR ACT ON THE road, it helps to have a partner who either sings or tells jokes. The Mac makes a lousy comedian (no sense of timing or delivery), but with the proper equipment, it can stand in for a small orchestra.

Nearly any Mac can digitize and play back sound files, but each minute of high-fidelity sound takes a lot of disk space. MIDI files take up significantly less space than digitized sound files since MIDI files are just instructions for playback, not the actual sounds; but to turn instructions into music, you need an external MIDI device.

Hello Music bundles Yamaha's CBX-T3 MIDI tone generator with Passport Designs' Trax sequencing software and MIDI Jukebox playback software. The tone generator (a fancy name for a synthesizer without a keyboard) is a platinum-color box about 7 inches deep, 9 inches tall, and 1 inch wide. A plastic base holds it firmly on end, so you'll hardly notice it snuggled up next to your Mac. Connecting the unit to your Mac is easy, though you have to wade through a few pages of the manual to find the Mac-specific section. The CBX-T3 has ¼-inch, line-level out jacks for taking the sound to an amplifier, as well as MIDI-in, -out, and -thru ports. Finally, you can plug an external source, such as a CD player or a microphone, into the mini audio-in jack, and mix the sound with the CBX-T3, using an external volume control.

The CBX-T3 has 192 voices, 10 drum kits, and digital reverb. It also comes with three instrument modes—one for General MIDI Level 1, one for Yamaha's Disk Orchestra Collection, and one that mimics the Roland MT-32. The modes don't give you any extra instruments—they just map the sounds differently. The ability to play tunes composed for other devices that follow the popular MT-32's instrument map without remapping the instruments by hand is a definite bonus.

While the Hello Music hardware is pretty cool stuff, the software included is functional at best. Trax is a Macintosh sequencing standard that's been around for years, and the clunky, black-and-white interface shows its age; the skimpy, jargony manual isn't much help for MIDI or music beginners. Also, Trax was made to put music tracks together, not create them; you need a keyboard or other MIDI instrument and/or composing software for that. However, many companies (including Passport Designs) sell libraries of MIDI songs and background tracks, fully licensed for presentation, so you don't need to be a maestro to benefit from this product. Also included is Passport Designs' MIDI Jukebox, which does exactly what its name suggests: plays MIDI songs. You can create a set of songs to be played sequentially, or use the loop key to play a song over and over again—a great feature for people who need background music.

By itself, the CBX-T3 is an impressive performer—plenty of voices and easy compatibility with at least two accepted standards. The included software adds some basic functionality. If all you want to do is play prerecorded MIDI tunes, Hello Music is a solid package. Creating a true music workstation, on the other hand, requires the purchase of a MIDI instrument (keyboard or otherwise, which—surprise—Yamaha sells) and composition software; external speakers wouldn't hurt either. Now, I wonder if I can get Van Halen on this thing. —CAMERON CROTTY

We're Redefining What You Should Expect From Office Printers.

ultraShield 1.252

Security Software

PROS: Integrates numerous security features; fast; includes both proprietary and DES encryption; excellent value. **CONS:** Poorly organized manual; incompatible with Mode32 INIT. **COMPANY:** usrEZ Software (714/756-5140). **LIST PRICE:** $149.

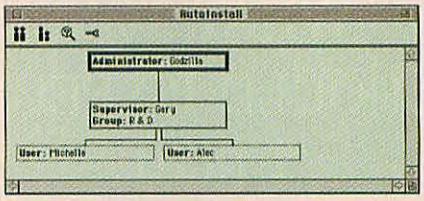
MW ★★★★

A SOPHISTICATED, FEATURE-PACKED security product, ultraShield combines practically every security feature you might need into one integrated package, including a lightning-fast version of the U.S. government data-encryption standard (DES).

ultraShield's approach to installation is a bit unusual. First you copy the master disk to an initialized unlocked floppy disk. You then launch the Administrator program from the floppy and create an installation script (really a master security profile containing all your security-feature and preference information and your user profiles). Then you use the floppy to install ultraShield on all the Macs you want to protect. The Access Controller, a virus-protection INIT, and the Administrator program are optional. Installing ultraShield via a master disk makes it easy to ensure that every machine has the same security profile. To make changes, alter the master floppy disk and reinstall ultraShield on each machine.

ultraShield's user structure supports three levels of users—Administrator, Supervisor, and User—with no limit to the number of users at each level. Users can modify only their own profiles and those of lower-level users, and the administrator can set passwords to lapse after a certain number of days—useful for accommodating temporary employees and generally controlling access to protected files.

Administrators assign privileges to regular and guest users—including the ability to create, delete, or rename files and folders; rearrange the Finder desktop; access and format floppy disks and SCSI drives; and access debuggers. Additionally, you can restrict access to desk accessories by user level. ultraShield also includes a screen saver that requests a user name and password upon waking from sleep mode.



User Hierarchy Configuration ultraShield's user hierarchy resembles a corporate organization chart, although unlike corporate America, ultraShield permits an unlimited number of users at each level.

The ultraAudit feature can log the history of operations such as start-ups; restarts; shutdowns; and use of applications, files, and DAs. You can view audit files from the Administrator program or export them to a text file. Thankfully, you can limit the size and detail in individual audit files to avoid filling up hard disks in busy systems.

Access privileges are identical to those used by System 7 file sharing and AppleShare except that ultraShield provides encryption; you can specify usrEZ's proprietary ultraCrypt, DES, or none. Whichever you choose, the encryption/decryption process is virtually transparent.

ultraShield's biggest drawback is its poorly organized, poorly indexed manual. It takes quite a bit of reading just to understand the installation process. The program is also incompatible with the Mode32 INIT (the company says, however, that the product is 32-bit clean). usrEZ's knowledgeable tech-support staff went all out to identify the problem and help get me running again. At press time the problem is unresolved, but the developer assures me a fix is in the works. These problems aside, ultraShield is a great product at a great price.

—GARY T. KRATZER

LightningScan Portable

Hand Scanner for PowerBook

PROS: Battery operated; plugs into modem port or printer port; lightweight; includes OCR software. **CONS:** Bulky interface; incompatible with some desktop Macs. **COMPANY:** Thunderware (510/254-6581). **LIST PRICE:** $459.

MW ★★★

THE NEW LIGHTNINGSCAN PORTable is a lot like Thunderware's other low-cost hand-held scanner, the LightningScan 400. It provides the same black-and-white scanning capabilities, the same adjustable 400-dpi resolution, and the same bundled image-editing and OCR software—but is tailored especially for PowerBooks.

First, the LightningScan Portable plugs into either the modem port or the printer port, instead of the SCSI port. That's particularly good news for Duo owners, who, unless they snap on a MiniDock, don't even have a SCSI port. Second, in place of the heavy SCSI-interface box that accompanies the LightningScan 400, the Portable sports a lighter, slimmer interface unit that houses a rechargeable NiCad battery, so you can operate the scanner for up to 25 minutes without having to plug it into an AC outlet. Third, it's a modest price to pay for the increased portability.

The LightningScan Portable is a good match for any PowerBook. The scanner with its interface-battery unit adds less than 20 ounces to your total PowerBook baggage. Even so, the 7-inch-long interface is still a bit clunky.

Setting up the LightningScan Portable is a matter of plugging the interface unit into the PowerBook (turning AppleTalk off in the Chooser if you use the printer port) and then connecting the interface to the scanner. From within the ThunderWorks image-editing software, you choose New Scan from the Scanner menu, and the LightningScan's LED light flickers to life; you're ready to start scanning.

Granted, 25 minutes of portable scanning might not sound like a lot, but remember, scanning a photo or a column of text takes only a few seconds. The LightningScan's battery drains only when the scanner is active, not when it's sitting idle, so you can scan dozens of pages on a single charge. A DA monitors the amount of battery power remaining. Recharging a fully depleted battery takes about six hours, and Thunderware says that you will have to replace the $29.95 battery once a year.

Switches on the scanner let you adjust brightness, resolution (from 100 to 400 dpi), and the coarseness of dithering. The software lets you translate the LightningScan's black-and-white dithered images into 37 levels of gray. You can adjust the brightness and contrast of scanned images and apply filters to smooth, sharpen, diffuse, or posterize images. ThunderWorks also provides basic image-editing tools.

Though designed as a PowerBook peripheral, the LightningScan Portable also works with some, but not all, desktop Macs. The configuration of the serial ports makes the LC and LC II incompatible with the scanner; nor does it work with 68000-based desktop Macs, such as the SE and the Classic. It does, however, work with the 68000-based PowerBook 100 and even the old Mac Portable. (The LightningScan Pro 256 and the LightningScan 400 work with all desktop Macs from the Plus up and require only System 6.0.7. The LightningScan Portable requires at least System 7.0.)

If your PowerBook has a SCSI port, you can get exactly the same performance from the AC-powered LightningScan 400. However, most PowerBook owners will find the LightningScan Portable's modem- or serial-port connection, lightweight interface, and total portability well worth the extra $60.—JOSEPH SCHORR

Flexibility (ˌflek·sə·ˈbil·ət·ē) *n.* 1, A feature previously not found in this category. *example:* For under $800, **TI microWriter™** printers with **Adobe® PostScript®** give you more networking and paper handling *flexibility* than Apple and HP, at a lot lower price.

THE UNDER $800 PRINTER, REDEFINED.

If you're looking for a PostScript printer with a street price well under $800, you'll have a hard time finding one with as many features as a TI microWriter.

Just look at the chart and compare it to our leading competitors, Apple and HP. Then, when you're ready for a full-featured printer that's truly flexible, at a price that's truly affordable, take a look at a TI microWriter. For more information or a dealer near you, call *1-800-527-3500.*

		TI microWriter PS23	Apple LaserWriter Select 310	HP 4ML
Print Speed		*5 ppm*	*5 ppm*	*4 ppm*
AppleTalk® Connection		*Standard*	*Not Avail.*	*Standard*
Paper Trays	*(std.)*	*250 sheet*	*250 sheet*	*100 sheet*
	(opt.)	*250 sheet*	*250 sheet*	*Not Avail.*
Auto Emulation Switching		*Standard*	*Not Avail.*	*Standard*
List Price		*$799*	*$1079*	*$1279*

EXTENDING YOUR REACH WITH INNOVATION™

TEXAS INSTRUMENTS

Adobe PostScript

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Circle 265 on reader service card

Compatibility (kəm·ˌpat·ə·ˈbil·ət·ē) *n.* 1, A feature typically lacking in this category. *example:* The new **600 dpi TI microLaser™ Pro 600** printer gives you Mac®, DOS, Windows, PostScript® and PCL5 *compatibility* standard; Apple and HP charge hundreds more.

Adobe PostScript

Specifications in chart are based on information as of 9/93. *Estimated dealer price including manufacturer's rebate is under $1400. Dealer prices may vary. †At 4% coverage. ‡Rebate applies to PS23 model. microLaser and "Extending Your Reach With Innovation" are trademarks of Texas Instruments. Adobe, PostScript and the PostScript logo are registered trademarks of Adobe Systems, Inc. LaserJet is a registered trademark of Hewlett-Packard, Inc. Mac is a registered trademark of Apple Computer, Inc. © 1993 TI.

THE UNDER $1400 PRINTER, REDEFINED.

If you're looking for a true 600 dpi printer with a street price under $1400, you'll have a tough time beating the new TI microLaser Pro 600.

You see, when we set out to design the ideal office printer, we began by asking thousands of users what they wanted most. And then, instead of making those "key care-abouts" optional, we made them standard.

Take print quality. We began with true 600 dpi resolution. And then enhanced it with 6MB of memory for improved graphics. Compatibility? We're Mac® DOS and Windows compatible right out of the box. With all the right languages and interfaces. And with the intelligence to switch these automatically, depending on the environment. Low maintenance? Our new toner cartridge typically gives you 15,000 pages between changes. Paper handling? Two 250-sheet trays come standard. And finally, value. Take a look at the chart below, compare features and price, and your choice should be simple.

So if you're considering a new printer, we invite you to try the new TI microLaser Pro 600. For more information or a dealer near you, call *1-800-527-3500.*

Ask About Our $60 Introductory Rebate.‡

	TI microLaser Pro 600	Apple LW Pro 600	HP LaserJet 4M
True 600 dpi	*Yes*	*Yes*	*Yes*
Speed/Processor	*8 ppm/RISC*	*8 ppm/68030*	*8 ppm/RISC*
Emulations	*PCL5/ Adobe® PostScript 2*	*PCL4/ Adobe PostScript 2*	*PCL5E/ Adobe PostScript 2*
Compatibility	*Mac/DOS*	*Mac/DOS*	*Mac/DOS*
Toner Cart. Life	*15K pages†*	*6K pages*	*6K pages*
Paper Trays	*250 sheet/ 250 sheet*	*250 sheet/ 100 sheet*	*250 sheet/ 100 sheet*
Auto Language Switching	*Yes*	*No*	*Yes*
Auto Interface Switching	*Yes*	*Yes*	*Yes*
List Price	*$1599**	*$2099*	*$2399*

EXTENDING YOUR REACH WITH INNOVATION™

TEXAS INSTRUMENTS

Circle 266 on reader service card

Falcon MC 1.0

Jet Fighter Simulation

PROS: Realistic cockpit depiction; heads-up display; bomb's-eye view. **CONS:** Fixed window size; requires fast CPU for adequate redraw rate. **COMPANY:** Spectrum HoloByte (510/522-1164). **LIST PRICE:** $69.95.

MW ★★★★

WHETHER YOU'RE AN ARMCHAIR jet-jockey or an experienced fighter pilot, you'll be impressed by this incarnation of the original Macintosh combat flight simulator, Falcon. The new release adds 4-bit color, enhanced graphics, and even more sophistication than its predecessor.

Falcon MC simulates the *F16 Fighting Falcon* jet fighter, the aircraft that achieved fame during the Gulf War for its television- and laser-guided bombs. The comprehensive manual includes a handy quick-start section, as well as thorough briefings on F16 systems, flying techniques, and fighter tactics. You can fly the simulator using the keyboard, the mouse, or an attached Gravis MouseStick or MouseStickII. The F16's complex controls make a MouseStick recommended equipment for serious play. You can optionally connect a second MouseStick for use as a throttle—a welcome help during dicey dogfights.

Falcon MC flies in an imaginary world, where an aggressive country threatens its helpless neighbor. A dozen missions take you to various enemy targets; you're scored on your ability to complete the mission and on the number of bandits you take out in the process. Before takeoff you must load your stores, including missiles, bombs, fuel tanks, and electronic countermeasures. Your choices are limited by weight and mounting requirements, and each additional package increases drag, reducing your maneuverability. Once you're mission-ready, you proceed through an authentic jet-engine start sequence, complete with realistic sounds and the takeoff roll.

In the air, your primary flight instrument is the heads-up display (HUD). Found in all modern fighters, the HUD projects crucial information about altitude, airspeed, heading, and attitude directly onto your windscreen. Falcon MC's HUD is uncannily authentic in its depiction of flight data. You also have forward, left, and right views inside the cockpit to scan less-frequently-used controls and indicators. A radar display works as a moving-map readout and TV-guided weapon monitor. You can aim weapons using your eye, the radar display, or a missile-mounted TV camera. You can even call up the missile-camera display after launch, replicating those stunning bomb's-eye views seen during the Gulf War.

As you fly around Falcon's world, you're treated to a colorful 3-D view showing sky, plains, mountains, lakes, airports, and buildings. A voice message system alerts you to dangerous conditions, and you can listen to radio traffic for warning of nearby enemies. If you don't want to fly one of the preprogrammed missions, you can jump right into the middle of an ongoing dogfight. And if you've got another Mac handy, two can play together head-to-head.

There is very little to dislike about Falcon MC. The disk is copy-protected, but it's a one-time-only copy protection—you're asked to look up something from the manual upon initial installation. The program uses a fixed-size window small enough to fit a Mac Classic screen, even though the only small-screen Mac Falcon MC runs on is the Color Classic. Because it's so complex, the HUD would be well served by the ability to use more screen area. That same complexity also slows the screen redraw rate, which is unacceptable on a 16MHz Mac unless you turn off all scenery rendering. Even on an accelerated Mac IIci, the redraw rate is unexceptional, although acceptable. But those are minor inconveniences easily forgotten once you've got that MIG in your sights.—MEL BECKMAN

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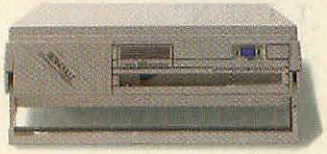
Product	Old SRP	New SRP	Product	Old SRP	New SRP
150MB MacTransportable Drive and Disk	$975	$699	Single 90MB Disk (in 5-Pack)	N/A	$99
90MB MacTransportable Drive and Disk	$713	$589	Single 65MB Disk	$129	$59
Single 150MB Disk (in 5-Pack)	$159	$109	Single 35MB Disk	$79	$39
Single 105MB Disk	$169	$99			



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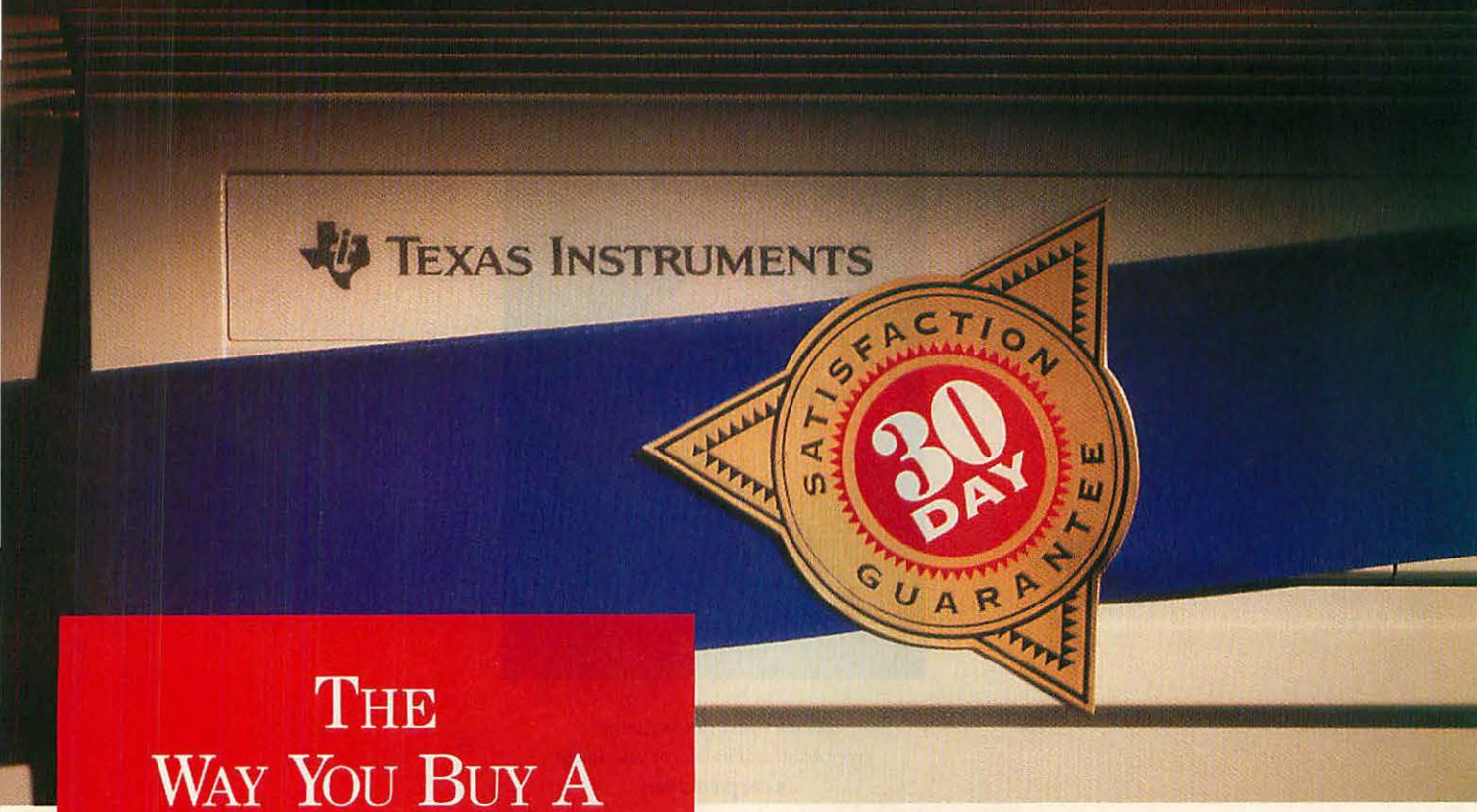
Circle 111 on reader service card

Satisfaction (ˌsat·əs·ˈfak·shən) *n.* 1, A feature previously left to chance in the purchase of a printer. *example:* When you buy a new TI printer*, your **satisfaction** is **guaranteed** or call TI within 30 days and we'll take it back.



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When you buy one of these new TI printers, if you need any help at all, simply call us toll-free at 1-800-TI-TEXAS, and we'll work with you. Then, within 30 days from date of purchase, if you're still not completely happy, call TI and we'll take it back. It's as easy as that. That's how confident we are in each and every printer we make. And even after the 30 days, you can continue to call the 800 number for any help you may need.

For more information about the TI microMarc™, the TI microWriter™ or the new TI microLaser™ Pro 600 printers, and for the name of a dealer near you, call *1-800-527-3500*. And see for yourself how TI is redefining what you should expect from an office printer.

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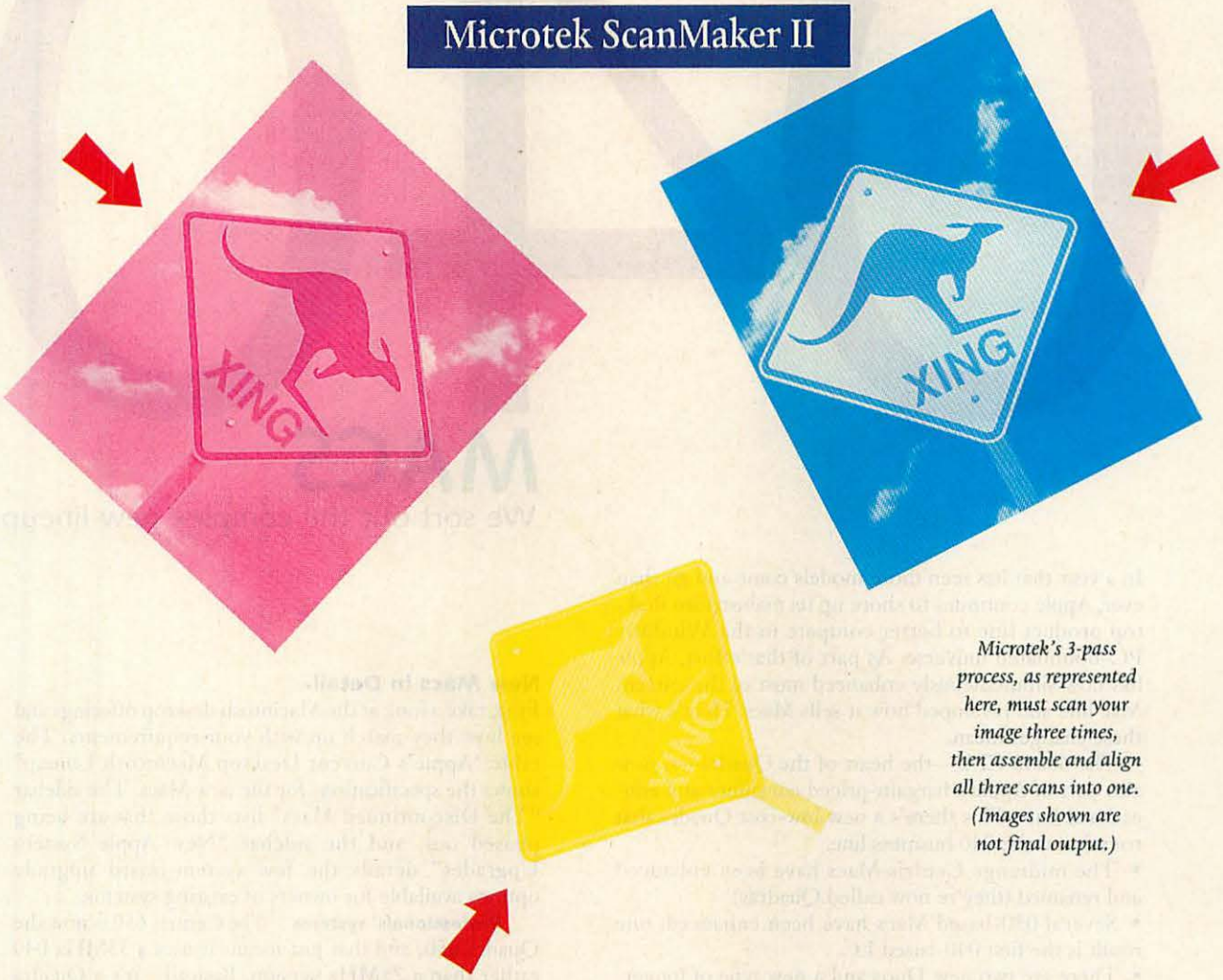
Microtek ScanMaker II



Microtek's 3-pass process, as represented here, must scan your image three times, then assemble and align all three scans into one. (Images shown are not final output.)

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MW LAB

Apple has Macs for all users.

NEW 040 MACS

We sort out the complex new lineup.

In a year that has seen more models come and go than ever, Apple continues to shore up its mainstream desktop product line to better compete in the Windows PC–dominated universe. As part of that effort, Apple has now simultaneously enhanced most of the current Mac line and revamped how it sells Macs. Here's what these changes mean.

- The 68040 CPU—the heart of the Quadra—is now also part of Apple's bargain-priced consumer and educational lines. Plus there's a new low-cost Quadra that rounds out the 040 business line.
- The midrange Centris Macs have been enhanced and renamed (they're now called Quadras).
- Several 030-based Macs have been enhanced; one result is the first 040-based LC.
- There are two new Duos and a new type of longer-lasting PowerBook battery (see "New PowerBook Duos," in this issue).

Gone are the days when each new Mac was a totally new computer. That means lower development costs for Apple (and lower costs for customers), fewer hardware versions for third-party developers to support, and the possibility of cheaper upgrades.

Apple's new Macs also represent a realignment of Apple's models and of how the company thinks consumers choose computers. The results are meant to simplify new purchasers' decisions, but for a while at least, these changes may confuse current Mac owners.

New Macs in Detail

First, take a look at the Macintosh desktop offerings and see how they match up with your requirements. The table "Apple's Current Desktop Macintosh Lineup" shows the specifications for the new Macs. The sidebar "The Discontinued Macs" lists those that are being phased out, and the sidebar "New Apple System Upgrades" details the few system-board upgrade options available for owners of existing systems.

Professionals' systems The Centris 650 is now the Quadra 650, and that just means it uses a 33MHz 040 rather than a 25MHz version. Basically, it's a Quadra 800 in a Centris 650 case. It is a great computer at a great price. And because it rivals the Quadra 800 (and the Quadra 950) in performance, it's not surprising that the Quadra 800 will be phased out in early 1994. That leaves one general-purpose tower configuration in the Mac lineup: the Quadra 950. The 950's advantage is its capacious internal space for drives, dual-SCSI-port implementation for certain types of servers and storage systems, and high-level VRAM expansion (enough for 24-bit color, rather than the 650's 16-bit).

Functionally unchanged are the AV Macs introduced in July (see "The AV Macs," *Macworld*, October 1993), although the Centris 660AV is now called the Quadra 660AV.

The new center Four of Apple's new midrange Macs have 25MHz LC040 CPUs (the version of the 040 with no built-in FPU) and a single LC III–style Proces-

BY CHARLES SEITER

Macintosh
Quadra 605
Macintosh
LC 475
Macintosh
Performa 475

sor Direct Slot (which accepts boards designed for both the LC/LC II type and LC III PDS type). They're basically 040-based LC III's.

The Quadra 605 (not available in Europe), LC 475, and Performa 475 and 476 all use the same system board and come in slim cases. The LC 475 and Quadra 605 can be ordered with 80MB or 160MB hard drives; a Performa 475 has a 160MB hard drive; the 476 has a 230MB drive. By the way, the Quadra 605's case differs slightly from the case used in the other models, but that difference is only skin-deep. (Apple offered no convincing reason why it couldn't use the existing Centris 610/Quadra 610 case instead of coming up with yet another look.) Apple expects individual Quadra 605s to cost as little as $1000, depending on hard drive and RAM capacities. The LC and Performa versions should be similarly priced.

In the PC world, the FPU-less 25MHz 486SX has become the standard small-office/home-office CPU, used in sub-$1000 systems available at places such as Sears, CompUSA, and Circuit City. Apple's use of the 25MHz LC040 in similarly priced systems looks to be the same strategy.

But is the lack of FPU critical? For most people, the answer is no. All of these LC040 systems come close to a Quadra 700 in overall performance for common tasks, and are significantly faster than a comparable 030-based Mac—in fact, typically twice as fast. The FPU greatly speeds certain calculations used in rendering, modeling, and scientific analysis—applications that demand a more capable system than these. But a typical business's Excel spreadsheets will gain little from an FPU.

A more significant omission for the Quadra 605 is Ethernet. The other Quadras offer built-in Ethernet ports; you will need to use the 605's one PDS

New 040-based LC III's now make up the midrange

NEW APPLE SYSTEM UPGRADES

For people with LC II and LC III models, Apple will offer a system-board upgrade to the LC 475 for about $499. Macworld Lab tests show that you will roughly double the performance of an LC III and triple that of an LC II. Apple promises that this upgrade will actually be available, unlike the hard-to-find upgrades to the LC III from the LC and LC II.

From the now-defunct Centris 610 and 650, Apple has no system-board upgrades to the Quadra 610 and 650, reasoning that the modest performance boost is not worthwhile. Apple earlier announced that the Centris Macs will have upgrades to PowerPC Macs sometime in 1994, and these will work in the Quadra 610 and 650 as well. But Apple would not say whether buyers of the new Quadra 605, LC, or Performa models would have system-board upgrade options to PowerPC.

Apple's Current Desktop Macintosh Lineup

Model	List Price (base model) [A]	RAM/Hard Drive Capacity (base model)	CPU	FPU	Maximum RAM	Base VRAM	Maximum VRAM	Number of NuBus Slots	Type of Processor Direct Slot
Quadra 950	$3999	8MB/0MB	33MHz 040	included	256MB	1MB	2MB	5	Quadra
Quadra 840AV	$4069	8MB/230MB	40MHz 040, 66MHz 3210	included	128MB	1MB	2MB	3	Quadra
Quadra 660AV	$2489	8MB/230MB	33MHz 040, 55MHz 3210	included	68MB	1MB	1MB	1 [D]	Quadra [D]
Quadra 650	$2000 [E]	8MB/230MB	33MHz 040	included	132MB	512K	1MB	3	Quadra
Quadra 610	$1400 [E]	8MB/160MB	25MHz 040	included [F]	68MB	512K	1MB	1 [D]	Quadra [D]
Quadra 605	$1000 [E]	4MB/80MB	25MHz LC040	none	36MB	512K	1MB	0	LC III
LC 520	$1599 [G]	5MB/80MB	25MHz 030	optional	36MB	768K	768K	0	LC III
LC 475	$1299	4MB/80MB	25MHz LC040	none	36MB	512K	1MB	0	LC III
LC III	$1349	4MB/80MB	25MHz 030	optional	36MB	512K	768K	0	LC III
LC II	[J]	4MB/80MB	16MHz 030 [K]	none	10MB	256K	512K	0	LC
Performa 550	$1200 [E]	5MB/160MB	33MHz 030	optional	36MB	768K	768K	0	LC III
Performa 476	$1800 [E]	4MB/230MB	25MHz LC040	none	36MB	512K	1MB	0	LC III
Performa 475	$1600 [E]	4MB/160MB	25MHz LC040	none	36MB	512K	1MB	0	LC III
Performa 466, 467	$1500 [E]	4MB/160MB	33MHz 030	none	36MB	512K	768K	0	LC III
Performa 460	$1300 [E]	4MB/80MB	33MHz 030	none	36MB	512K	768K	0	LC III
Performa 410	$1000 [E]	4MB/80MB	16MHz 030 [K]	none	10MB	512K	512K	0	LC
Color Classic II	[J]	4MB/80MB	33MHz 030	optional	36MB	256K	512K	0	LC III
Color Classic	[J]	4MB/80MB	16MHz 030 [K]	optional	10MB	256K	512K	0	LC III
Classic II	[J]	4MB/80MB	16MHz 030 [K]	none	10MB	OK	OK	0	none

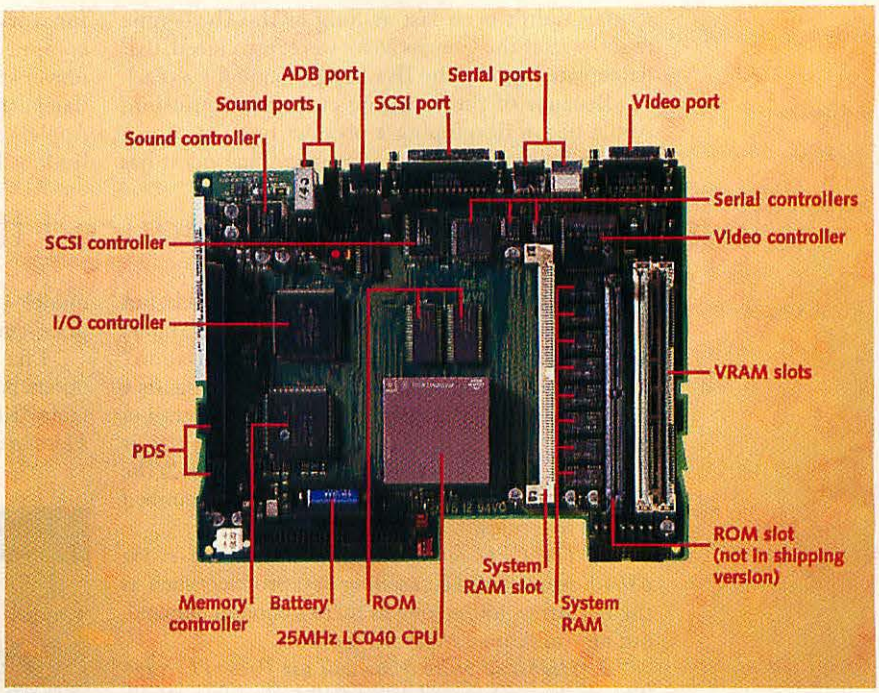
[A] All Performa and LC prices include a keyboard and monitor. LC prices are for institutions; individual prices at campus stores will be about 10 percent higher. [B] For additional drives have a stripe pitch of 0.26mm, which is equivalent to a tridot monitor's dot pitch of 0.28mm. [D] Requires a $99 adapter to hold either a 7-inch NuBus board or a 7-inch PDS board. internal CD-ROM costs $1300. [H] Taken up by a bundled CD-ROM drive. [J] Also available without bundled monitor. [K] Not sold in the U.S. or sold only to limited markets. Prices vary.

to add this capability in an Ethernet-based office.

Like the other new midrange Macs, the Quadra 610 has a 25MHz CPU, but (except for the base model) it's the full 040 (with FPU); the Centris 610 it replaces used a 20MHz LC040. The Quadra 610 also has a built-in Ethernet port (which was optional on the Centris 610) and one slot, which takes only the still-rare 7-inch NuBus or Quadra PDS cards (you'll need a $99 adapter for either type). Basically, it's a Centris 650 in a Centris 610's case.

Centris 610 owners will feel the most upset by these new Macs, since the Quadra version of the 610 (for which Apple has no upgrade board) noticeably outperforms what they bought earlier this year. But, with a PowerPC upgrade for Centris 610s planned for sometime next year, Apple decided it was better for Centris 610 (and 650) owners to wait until then for a significant performance boost. That's actually better in the long run.

But there is a complication for Centris 650 owners: the first PowerPC upgrades are likely to support NuBus, so if you have NuBus boards, you don't lose that investment. But Apple intends to switch from NuBus to Intel's PCI bus (probably in 1995), so you'll have to decide if you can put off the purchase of add-on boards until then and forgo the initial PowerPC upgrades (and perhaps buy the inevitable DayStar Digital accelerator in the meantime).



New System Board The Quadra 605, LC 475, and Performa 475 and 476 all share this new system board.

Number of Drive Bays [B]	Built-In Ethernet	Monitor Type [C]
3	yes	none
2	yes	none
1	yes	none
1	yes	none
1	yes	none
0	optional	none
1 [H]	none	14-inch Trinitron
0	none	14-inch Trinitron [I]
0	none	14-inch Trinitron [I]
0	none	none
1 [H]	none	14-inch Trinitron
0	none	14-inch 0.28mm tridot
0	none	14-inch 0.28mm tridot
0	none	14-inch 0.28mm tridot
0	none	14-inch 0.39mm tridot
0	none	14-inch 0.39mm tridot
0	none	10-inch Trinitron
0	none	10-inch Trinitron
0	none	9-inch monochrome

(excluding internal hard drive and floppy drive). [C] All Trinitron monitors [E] Estimated dealer price. [F] Not included in base model. [G] Version without [K] Has a 16-bit system bus (which slows performance).

Basic workhorses The new 030-based Macs come in two main breeds: the LC III and Performa 460 series, and the LC 520 and the Performa 550.

The three Macs in the Performa 460 series—the 460, 466, and 467—are basically an LC III with a faster CPU (33MHz versus 25MHz). The Performa 466 and 467 offer a better monitor than the 460 (0.28mm dot pitch versus 0.39mm), and all three have different sets of software preloaded on their hard disks. This perhaps represents the Apple definition of *simplification* at its most acute—these computers have different model numbers because they are sold in slightly different consumer outlets and because one offers Super Munchers and Mario Teaches Typing, and the other offers Monopoly and the Apple Font Pack.

These new 030 Performas all beat the performance of 1992's business standard: the IIci. The price is competitive, too; the suggested retail price for the 460, including the mediocre-quality 14-inch Performa Display, is $1300—an amazing bargain for the Mac home-office market. Meanwhile, Apple plans to keep offering the LC III for educational sales.

The LC 520 and Performa 550 are basically all-in-one multimedia LC III's. The 520 is a 25MHz 030-based system with an internal CD-ROM drive (see "The Macintosh LC 520," *Macworld*, September 1993). The Performa 550 is the corresponding consumer-channel box: it has a 33MHz 030 for a slight performance improvement. If you want a system with a CD-ROM, the base price of $2000 (which includes a high-quality Trinitron monitor) makes the 550 a wonderful choice.

A New Desktop Lineup

Apple has been criticized during the last couple of years for introducing and then dropping various models—the IIvx is a notorious example. The name

Centris didn't even last as long as the IIvx—nine months after the Centris Macs were introduced, that nameplate is gone (the IIvx hung around for a year).

Because of the resulting customer confusion, Apple began developing a product line that it can market for at least a year at a time. That quest has led Apple not just to introduce some new models, but also to describe the new models and their variants for different markets as "product-line simplification."

In a way, Apple has introduced its own Mac clones

To the rest of us, *simplification* usually suggests a smaller rather than a larger assortment of objects, but this particular example of Cupertino-speak has at least some justification. The new 68040 series is the beginning of a new Macintosh world organized around five rules:

1. *The CPU for midrange desktop Macs is the 68040.* Apple will keep selling 030 products such as the Performa 460 as long as there's enough demand, but new midrange Macs will be 040s.

2. *High-end office Macs will use PowerPC chips.* The next step beyond a fast 040 isn't a faster 040, but high-speed RISC architecture in the form of the PowerPC series of chips, starting with the 601 (see "Making the Quantum Leap to PowerPC," *Macworld News*, November 1993).

3. *Portable Macs will still use 68030s.* The 68040 is simply too power-hungry for portable use, especially at high clock speeds. Not only would battery life be unacceptably short, but all those dissipated watts of power would apply themselves in close confinement to melting holes in the plastic case.

4. *Macs will be named based on what kind of customer Apple is targeting, not on the machines' capabilities or relative performance.* That means that there are four basic nameplates: Quadra for business customers, LC for education customers, Performa for home customers, and PowerBook for portable customers. The Performa and LC models will come as complete systems, with monitor and keyboard; the Quadra line will be sold modularly (no keyboard or monitor).

5. *Not all Macs will be sold in all nations.* Apple has long let each geographic region decide what to sell and how to price it, but this year marked the first availability of more powerful Macs outside the U.S. than in it. First, the LC 520 was made available this summer to Japanese and Canadian consumers but restricted to U.S. educators. Now, Apple is releasing the Color Classic II to just Far East customers. As Macworld Lab tests show, the Color Classic II's 33MHz 030 and 32-bit system bus make it two and one-half times as fast as the Color Classic, which will still be sold in the U.S.

Macs by Many Names

Apple has been forced, as the only vendor of Macintoshes, to do what normal market forces have done for other personal computers: slash prices and improve models frequently. IBM and the other PC makers have migrated their product lines toward the powerful Intel 486DX and 486DX2 CPUs for mainstream desktop use, toward the midline Intel 486SX for home users, and toward the new Intel Pentium for workstation-level systems. Apple has no direct competition, but since it sells computers in the same universe as the PC vendors, it's obliged to make similar performance leaps in its new models. In fact, Apple's current strategy is nearly identical to that of leading PC maker Compaq. It's not a bad business model—Compaq has emerged from a year of brutal price-cutting competition with record profits.

Like Compaq, Apple has named its lines of computers based on the market it is selling them to. The table "Keeping Mac Models Straight" shows which Macs in each line are actually the variants of the same

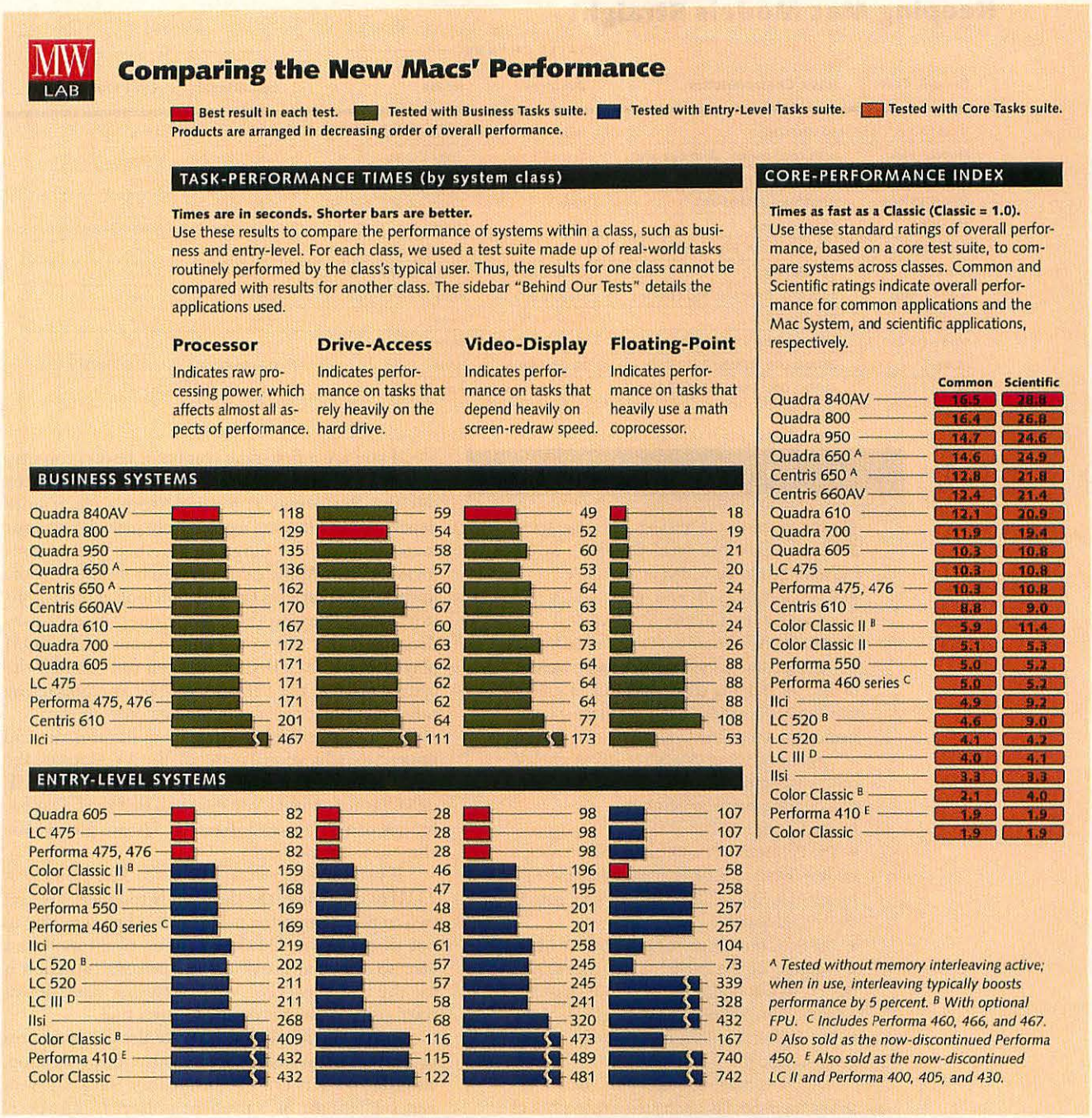
BEHIND OUR TESTS

MW LAB To gauge the latest Macs' basic performance, Macworld Lab ran three sets of real-world tests. The Core-Performance set let us gauge relative performance against all other Macs by using core applications that test basic performance attributes, which we report in terms of times as fast as a Classic. These core rankings may differ from what we reported in our June issue; differences are based on refinements made since then to our core tests.

A second set—Business Systems—is a mix of tasks typical of professional business users—people who would want or need an 040-based system. The programs used include Adobe Photoshop, Aldus FreeHand, Claris FileMaker Pro, Microsoft Excel, Microsoft Word, QuarkXPress, and Specular Infini-D.

The third set—Entry-Level Systems—is a mix of tasks typical of less-ambitious users—people looking for an 030-based system for their home or small office. The programs used include Claris FileMaker Pro, ClarisWorks, Deneba Software's UltraPaint, and Microsoft Excel and Word. This approach lets you compare Macs doing the kind of work you're likely to do. You can compare results for Macs tested with the same set of tasks, but you cannot compare results for Macs tested with a different set of tasks.

For all the new Macs, we tested preproduction systems, although our experience in recent years has been that they perform very much like final shipping versions. In all cases, we used an external 230MB Quantum-based hard drive from APS, whose speed ensures that we're consistently measuring the Mac bus's performance. We also used the standard Apple Trinitron 14-inch color monitor for all systems that don't have a built-in monitor; this ensured that we measured only the video circuitry's performance.—**Macworld Lab testing supervised by Mark Hurlow and Danny Lee**



basic machines. It's simpler than it looks. Let's call all the new 040 models simply Model C (my label, not Apple's): a 25MHz LC040 Mac. If you buy Model C at Circuit City, the box says Performa 475 or 476, depending on what software is bundled with it. If you're a school or university, you can fill a computer lab with Model Cs, but your education-market sales rep will call this computer the LC 475. If you wander into a computer store, you'll find the Model C called a Quadra 605. Apple wants to provide each marketing channel with something, even if it's the *same* thing, with essentially the same price.

While the performance of the Model C is the same across the board, there's a different set of bundled software or a different support program, or some other marketing distinctions. For example, if you buy your Model C for home use in the consumer channel now, as a Performa, you will take home a single box from the store, since the bundle includes a monitor. The box will contain a simplified road-map reference guide for connecting your components, and your software will include basic training that assumes you might not know what an icon is (Apple's been through a learning experience at Sears). By contrast, site-licensed education buyers get lots of direct support from Apple. Finally, if you buy a Quadra Model C through a traditional computer store, the dealer is primarily in charge of hand-holding for installation and support follow-through.

This might not be the way you would set up a product line, but Apple is convinced that the people who buy computers from appliance retailers and the people who buy them from computer dealers are in fact not the same people. The strategy has worked in

Keeping Mac Models Straight

Generic Class	Basic Characteristics	SALES CHANNEL: Business	Home	Educational	Only Outside U.S.
Model A	16MHz 030	none	Performa 410	none	LC II
Model A Plus	adds color display, all-in-one unit	Color Classic	Color Classic	Color Classic	none
Model B1	25MHz 030	none	none	LC III	none
Model B1 Plus	substitutes 33MHz 030	none	Performa 460, 466, 467	none	none
Model B2	all-in-one unit	none	none	none	Color Classic II
Model B2 Plus	adds CD-ROM, larger monitor	none	Performa 550	LC 520	none
Model C	25MHz 040	Quadra 605	Performa 475, 476	LC 475	none
Model C Plus	adds FPU, drive bay, and Ethernet	Quadra 610	none	none	none
Model D	33MHz 040	Quadra 650	none	none	none
Model D Plus	adds drive bays, fast SCSI, tower case	Quadra 950	none	none	none
Model E	25MHz 040, 55MHz 3210 DSP	Quadra 660AV	none	Quadra 660AV	Quadra 660AV
Model E Plus	40MHz 040, 66MHz 3210 DSP	Quadra 840AV	none	none	none

THE DISCONTINUED MACS

In the process of relabeling and redesigning boxes, Apple has decided that six earlier models need to be buried immediately:

- The Centris 610 and 650, which are replaced by the Quadra 610 and 650. The Centris 660AV is now the Quadra 660AV.
- The IIvx, IIvi (a lower-performance version of the IIvx sold only outside the United States), and the Performa 600 (another lower-performance variant of the IIvx).

Another set of Macs are being phased out, which means that when dealers run out of stock, there will be no more:

- The Quadra 800.
- The Performa 400, 405, and 430 (relabeled LC II's), which are being replaced by the Performa 410. The LC II will be sold only outside the United States.
- The Performa 450 (a relabeled LC III), which is replaced by the Performa 460 series. And the LC III will no longer be sold outside the education market once dealers run out.
- The Classic II and the Performa 200 (a relabeled Classic II).

Apple is making deals with volume resellers for discounts on the remaining stock of many discontinued Macs. For example, Circuit City will get the bulk of the remaining Performa 430s (renamed LC III's) and sell them for $999. The price of the Performa 600 with CD-ROM drive (a relabeled IIvx) will drop to $1799 as a closeout deal. Apple expects stocks to run out by the end of the year.

the sense that the Mac is now carried by three times more retail outlets than it was just a few years ago. In a way, Apple has introduced its own Mac clones.

Making Sense of It All

Despite the name-juggling and package-tweaking, it's possible to make sense of the new lineup. Here's some advice.

If you are a first-time computer buyer, you may as well do what Apple wants you to do and go check out the Performas at a retail store's electronics department. They are aggressively priced, and your main decision will hinge on whether you're comfortable with Apple's coarser-pitch monitor in the lower-priced variants (be sure you look at both monitors before buying the coarser one). A secondary decision is this: Are you going to want a CD-ROM player some day? If you will, you can't match the system price of the Performa 550 by assembling any other combination of components on your own.

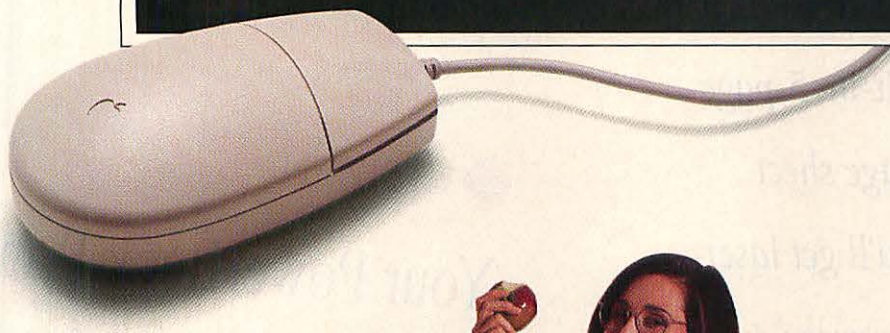
If you have special interests in multimedia and interactive educational material, the AV Macs are the obvious move. If you've managed to live with an SE or a Classic for years, you may find that the CD capabilities of a Performa 550 or LC 520 are plenty dazzling in their own right.

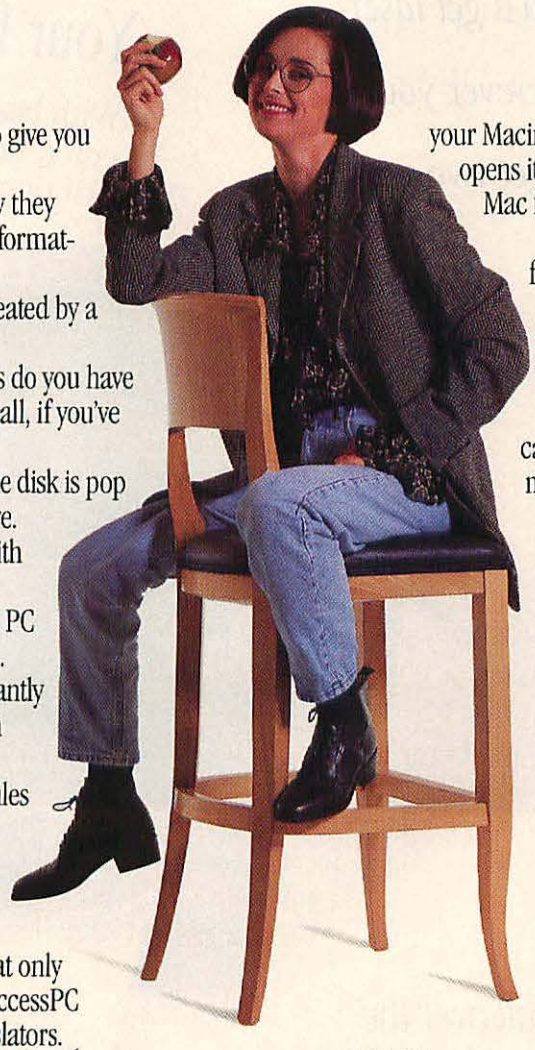
If you already own an 030-based Mac running at 25MHz or higher, the decision is tougher. You get two to three times the performance by migrating to one of the newer Quadras. Or you could wait for a year to see what the price/performance situation is for the first PowerPC Macs, with inevitable downward price pressures on the Quadra line.

Apple obviously had to take drastic measures recently, just to hold market share on the desktop, and Mac owners can't be blamed for thinking "wait and see" might be a prudent policy. If, however, you're working with large databases or high-resolution color files, you're already waiting during a large chunk of your workday—and your time has its own costs. To make a serious evaluation, first look at the prices in a *Macworld* issue from two years ago and figure out how you would have justified a purchase then. Now look at the prices in "Apple's Current Desktop Macintosh Lineup" and rethink the same arguments. No matter how many times the names and processors change, the inexorable trend toward more power at lower prices makes this hypothetical two-year decision simpler: Get the most power you can afford now and expect to need later. ■

Macworld contributing editor CHARLES SEITER, who was personally tormented during 1993 by Apple price cuts on the system he bought for Christmas 1992, does software and electronic design for bioanalytical instruments.

How To Use PC Data Without Losing Your Cool





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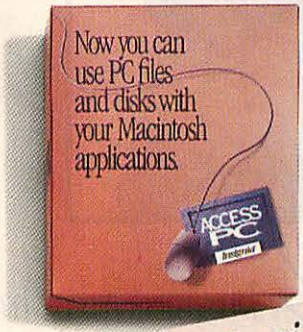

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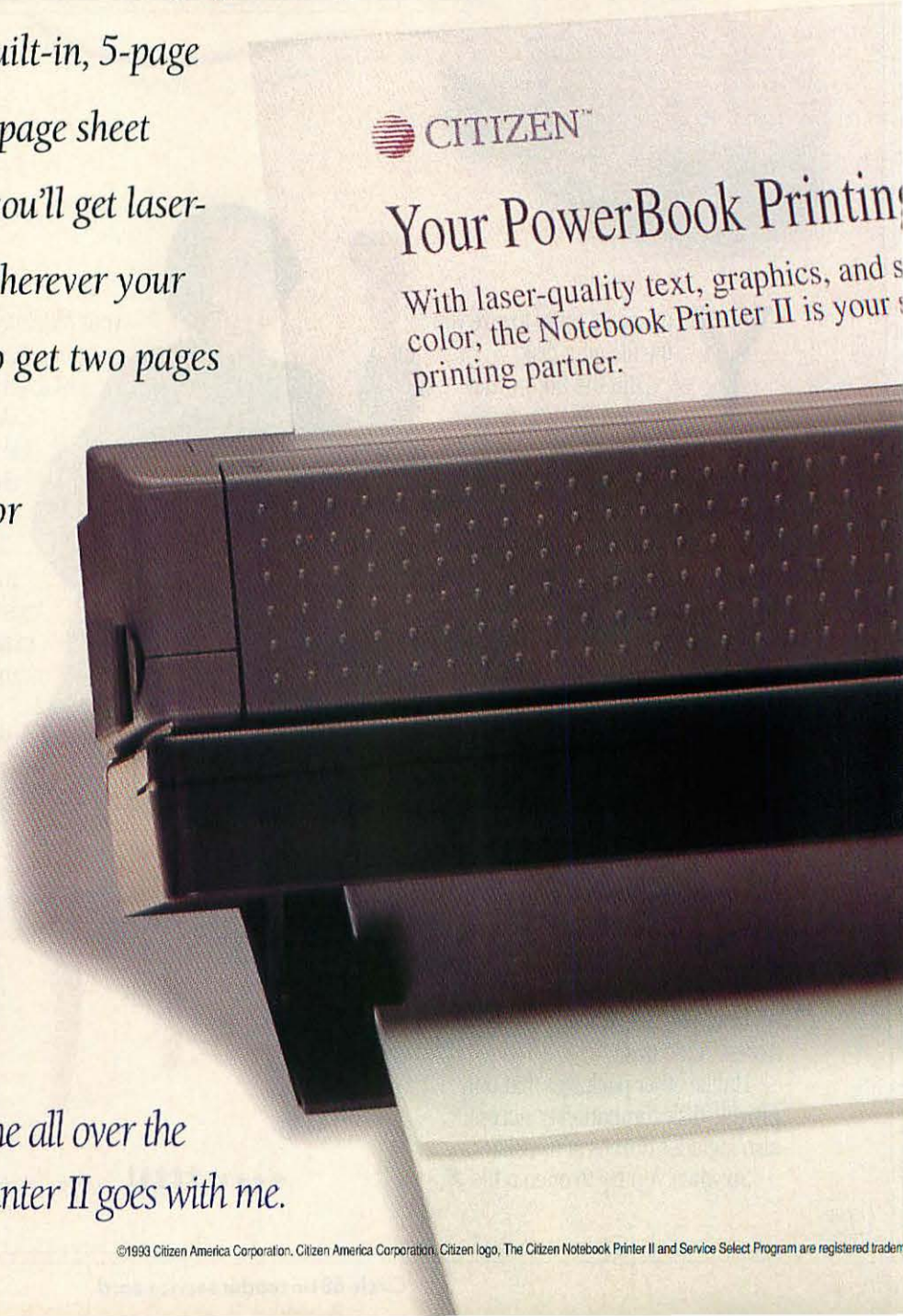

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The 270c is a Duo of a different color—up to 32,768 of them. The 270c's 16-bit color is a first for any notebook computer, but it works only in a 640-by-400-pixel screen mode. At its full 640-by-480 screen size, the Duo 270c shows 256 colors (8-bit). The capacity of video RAM dictates the limitation. Although 16-bit color represents an improvement over 8-bit, color LCDs don't have the tonal range of CRTs, so you can't actually see all 32,768 colors. In the 16-bit, 640-by-400 mode, the image is centered on the screen with a black band at the top and bottom, similar to the look of a letterboxed movie. The 270c screen is the same size as the PowerBook 180c screen: 8.4-inch diagonal at 94 dpi, which produces

PHOTOGRAPHS BY PAUL FRANZ-MOORE

NEW POWERBOOK DUOS

We look at Apple's new Duos and compare 10 docking stations

BY CARY LU

MW LAB

The past year hasn't been an easy one for Apple's PowerBook Duos. Introduced in October 1992, the lightweight (4.2-pound) notebook computers—which transform into fuller-featured Macintoshes when plugged into a docking station—didn't deliver the sales Apple anticipated. According to the market research firm International Data Corporation, Apple sold about 100,000 Duos through June 1993.

Despite the modest sales of the Duo 210 (now discontinued) and 230 ($1499), Apple hopes to generate new interest in the product line with the PowerBook Duo 250 and 270c, which feature gray-scale and color active matrix displays, respectively; improved battery technology; and, in the case of the 270c, a math coprocessor and more RAM capacity. These improvements, combined with a flurry of third-party docking-station introductions, should convince even skeptics that the Duo line represents flexibility that's unmatched among notebooks.

Why a Duo?

PowerBook Duos represent a trade-off between flexibility and all-in-one functionality. You give up common amenities such as a floppy disk drive, a full-size keyboard (the Duo's is 88 percent of full size), and a large PowerBook trackball. In return, the Duo is about two pounds lighter than a PowerBook, has longer battery life than a PowerBook, and really can turn into several kinds of computer based on the docking station it connects to. What has been missing until now is a range of docking-station options that take advantage of the Duo's design. Even Apple's own Duo Dock was late, shipping several months after the Duo 210 and 230 debuted.

If you're already familiar with the Duos, the new Duo 250 is easy to picture; except for its active matrix screen, the 250 is the same as the 230. The 68030 processor runs at 33MHz (without a math coprocessor); you can expand the standard 4MB of RAM to 24MB. The Duo 250 will be sold in two configurations, with a 200MB hard drive for $2500, and with a 200MB hard drive, 12MB of RAM, and an Express Modem for about $3000 (prices are estimated street price). The 9-inch-diagonal, 640-by-400-pixel screen shows 85 dpi, compared with the 10-inch-diagonal, 77-dpi screen on the PowerBook 180.

PowerBook Duo 270c

The PowerBook Duo 250 features a monochrome active matrix display (above left). The 270c (above right) uses a color active matrix screen; here, it is displaying 256 colors (8-bit) in 640-by-480-pixel resolution. The 270c has the capability to display up to 32,768 colors (16-bit), but only in 640-by-400 mode.

a shrunken image compared with other Macintoshes.

Like all color LCD screens, the 270c screen burns power, and that takes its toll in battery life. The additional color circuitry brings the 270c's weight up to 4.8 pounds, about a half-pound heavier than other Duos. (That's more than 2 pounds lighter than the PowerBook 180c, which also uses a color active matrix LCD.)

To accommodate the thicker color screen, the 270c now measures 1.5 inches high, compared with 1.4 inches for other Duos. An extra tenth of an inch may not seem important, but it means that the 270c does not fit into Apple's Duo Dock, so Apple has an upgraded docking station, the Macintosh Duo Dock, that allows for the taller Duo. The new Dock's higher door accepts all Duos. Duo Docks shipped after the introduction of the 270c will have the new case cover with a hinged door; an upgrade for older Duo Docks costs $69. The extra height of the 270c won't affect other docking stations.

Beyond the screen, the 270c has a redesigned motherboard: the 33MHz 68030 has a math coprocessor, and the system accepts up to 32MB of RAM (4MB is standard). If the 270c is plugged into a Duo Dock equipped with a coprocessor, the system turns off the Dock's coprocessor. The 270c comes with a 240MB hard drive and costs about $3000, $3500 with 12MB of RAM and an Express Modem. (See "Duo Speed Check" for test results.)

With the Duo 250 and 270c, Apple will ship a new high-capacity Type II nickel–metal-hydride (NiH^2) battery with about 25 percent more capacity. For the 250, Apple says, the battery will last two and a half to five hours; for the 270c, two to four hours. The $85 Type II battery also works in older Duos. Software that comes with the battery (when the battery is purchased as a replacement part) will reprogram the EverWatch Battery Saver software built into the older Duos to adjust the charging rate for a higher-capacity battery. Duos sense which battery type is in use. Apple will continue to ship the earlier Type I battery with the Duo 230.

You can upgrade your Duo 210 and 230 to the active matrix gray-scale screen for $1299. An upgraded 230 is functionally the same as the 250, but an upgraded 210 will still run at 25MHz instead of 33MHz. The more comprehensive conversion to a 270c (a system upgrade) costs $1999 for a color screen, new motherboard, and case lid. As usual, the upgrades offer little or no financial advantage.

Docking a Duo

All Duos have just two ports built in—a printer serial port for printing and connecting to a LocalTalk network, and space for a modem with a telephone-line connector. Any further expansion requires a docking station that connects through a thin, wide 152-pin connector at the back of the Duo. Just about every circuit in the Duo can be tapped through the connector—the 32-bit-wide data bus and address bus, power at several voltages, the telephone-line connection for the internal modem, and more.

Deciding on an internal modem has been easy for Duo owners: Apple's PowerBook Express Modem ($319) has been the only one available. Global Village Communication (415/390-8200) now offers an alternative, the PowerPort/Duo fax modem ($129). The PowerPort/Duo uses AT&T's modem chip set and offers 14.4-Kbps fax capabilities; the Express Modem's Rockwell chip set handles faxes at 9600 bps.

Docking-Station Options

Apple's new PowerBook Duos are capable traveling companions, but that's only

BEHIND OUR TESTS

MW LAB

Two features affect Duo Dock performance: SCSI and video. We used our standard suite of video tests, which include Word and Excel scrolling processes, to determine the rate at which the dock feeds video to the CPU. These tests were performed in 8-bit mode (256 colors) on both a 14-inch and 16-inch Apple color monitor (see "Testing the Docks").

To test SCSI performance, we opened and saved a 5MB Photoshop 2.5 file to an external hard drive connected via a standard SCSI cable. This test determines the rate at which hard drive data is passed through to the CPU. SCSI performance didn't vary significantly, so we have not included those results. To gauge the performance of the PowerBook Duos, we measured processor, disk-access, math, and video tasks (see "Duo Speed Check"). We ran the same tests on the PowerBooks 180 and 180c and the Compaq LTE Lite 4/25c.—**Macworld Lab testing supervised by Matthew Clark and Mark Hurlow**

MW LAB Duo Speed Check

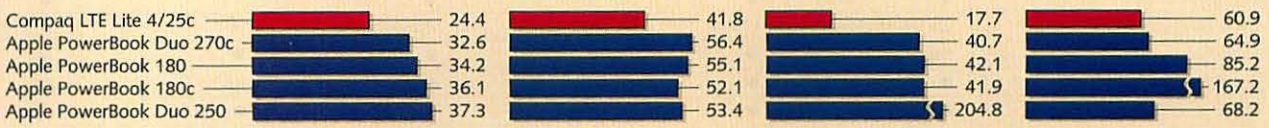
Fastest result for each test. Times are in seconds. Shorter bars are better. Products are arranged in decreasing order of overall performance.

Processor Tasks
Our tests to measure processor performance included recalculating a spreadsheet, finding and replacing a word in a word processor, and sorting a database.

Disk-Access Tasks
Our tests to measure performance of tasks that rely heavily on the hard disk included opening files and sorting a database (on disk).

Math Tasks
We ran tests that depend heavily on a math coprocessor to achieve reasonable performance, including recalculations involving scientific functions.

Display Tasks
To measure display performance, we averaged the time needed to perform a series of scrolls in Microsoft Excel and Microsoft Word.



All notebooks were configured with 4MB of RAM. The PowerBook Duos 250 and 270c had 200MB internal hard disks. The 180 and 180c had 80MB internal hard disks. The Compaq notebook had a 120MB hard disk. We tested color notebooks (indicated by a *c* in the model name) in 256-color mode.

half of the PowerBook Duos' appeal. The other half lies in the capabilities you can add via docking stations.

Ten docks are now available and a few more are coming. Macworld Lab tested several docks for their SCSI and video performance. Essentially, all products performed equally, so you should choose by features and price rather than performance. SCSI performance was not significantly different among docks, so no testing results are listed. See "Testing the Docks" for video performance. Because overall performance differences are minimal, we have awarded no Editors' Choice for this article. Before you decide which, if any, docking station you need, you should weigh some key factors.

Power The smallest docks don't interfere with the Duos' power connector. The larger docks cover it and contain a pass-through connector for the Duos' AC power adapter. Either way, all docks (except for Apple's big Macintosh Duo Dock) get their power from the Duo and can operate without AC power. Although you're unlikely to connect to devices such as external monitors in the absence of AC power, the capability to operate from battery power is handy for accomplishing short tasks without fussing with extra cables. In "Comparing the Docks," the power-consumption figures are maximums, with all circuits running full tilt; average use may be much less.

SCSI operation Many docking stations include a SCSI port; most use the squarish HDI-30 connector. Apple and third-party companies sell two types of cable adapters: a 29-pin SCSI system cable to connect to SCSI devices such as hard disks, CD-ROMs, and scanners; and a 30-pin SCSI disk adapter that lets you use the Duo in SCSI disk mode, so the Duo's hard disk becomes a SCSI disk for another Mac. Several docks can make the SCSI system cable behave like a SCSI disk adapter. Newer Technology's SCSI Micro Dock can also do the reverse. Another option is the SCSI DOC from APS (816/373-5800); this adapter converts the HDI-30 to the standard DB-25 SCSI connector used on all desktop Macs. Among the docks, only the RasterOps DuoMate 16sc and the desktop-size Apple Macintosh Duo Dock have a SCSI port with a DB-25 connector. The DuoMate 16sc supports SCSI devices and SCSI disk mode. The Duo Dock does not support SCSI disk mode.

The PowerBook Duo line now boasts several docking-station options from Apple and third-party companies, including (clockwise from top left) the Apple Macintosh Duo MiniDock, RasterOps DuoMate 16sc, Apple PowerBook Duo Floppy Adapter, Lapis SCSI Dock, and E-Machines Presentor.

Floppy disk All docks with a floppy drive port are compatible with Apple's Macintosh HDI-20 External 1.4MB Floppy Disk Drive ($139), originally introduced for the PowerBook 100. All other Apple floppy disk drives are incompatible. The Macintosh Duo Dock has a floppy disk drive built in.

Video All the video ports on the docks use Apple's standard 15-pin D connector, not the special small video connector on standard PowerBooks. "Comparing the Docks" shows color depth for different screen sizes. All except the Duo

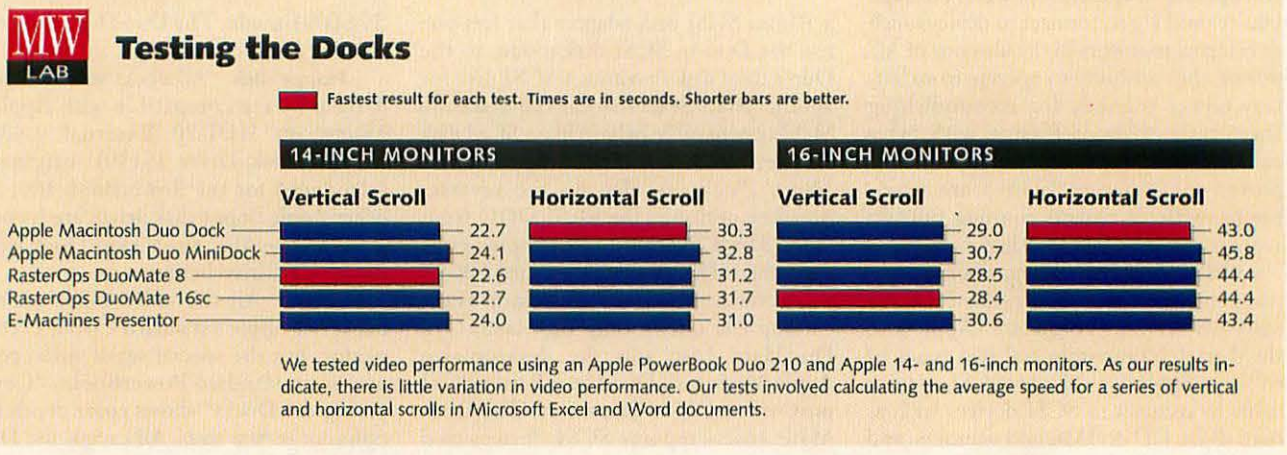
Comparing the Docks

	Apple	Apple	Apple	E-Machines	E-Machines	Lapis
Product	Macintosh Duo Dock	Macintosh Duo MiniDock	PowerBook Duo Floppy Adapter	EtherDock	Presentor	Lapis SCSI Dock
Price	$1079	$589	$109	$699	$499	$199
Phone	408/996-1010	408/996-1010	408/996-1010	408/541-6100	408/541-6100	510/748-1600
Toll-free phone	800/776-2333	800/776-2333	800/776-2333	800/344-7274	800/344-7274	800/435-2747
Shape	desktop case	wedge	in-line	wedge	in-line	in-line
Weight (in pounds)	13.1	1.24	0.25	1.25	0.63	0.29
Number of serial ports	2	2	NA	2	NA	NA
SCSI port	●	●	NA	●	NA	●
Cable compatibility	use DB-25 plug	HDI-30	NA	HDI-30	NA	29 as 30
Floppy drive port	floppy drive built in	●	●	●	●	NA
Sound-in port	●	●	NA	●	NA	NA
Sound-out port	●	●	NA	●	●	NA
Ethernet port	via optional card	NA	NA	10BaseT	NA	NA
Video/color depth	8-bit to 16-inch (512K VRAM); 16-bit to 16-inch (1MB VRAM)	8-bit to 16-inch	NA	8-bit to 16-inch; 4-bit to 19-inch	8-bit to 16-inch; 4-bit to 19-inch	NA
Override monitor sense	○	○	NA	●	●	NA
VGA/SVGA support (maximum refresh rate in Hz)	VGA (60), SVGA (56)	VGA (60), SVGA (56)	NA	VGA (75), SVGA (75); cable adapter $19	VGA (75), SVGA (75); cable adapter included	NA
Composite television output	with encoder	with encoder	NA	with encoder	NTSC/PAL	NA
Security slot for locking dock/Duo	●/●	●/○	●/●	●/○	○/○	●/●
Power consumption (max. in watts)	87 *	4.5	1.5	2.5	2	1.5
Tested by Macworld Lab	●	●	●	○	●	●
Tech-support rating	very good	very good	very good	unacceptable**	unacceptable**	acceptable

*● = yes; ○ = no; NA = not applicable. Technical-support ratings are based on a series of calls made to each company by Macworld staffers (posing as customers) to gauge the accessibility, helpfulness, and accuracy of the company's support technicians. Macworld uses a point system, including bonuses and demerits, to derive the final rating. Ratings are for companies, not individual products, and we call only those companies whose products Macworld Lab tests. *Power-consumption figure is for the combined Macintosh Duo Dock and a PowerBook Duo. **SuperMac Technology owns E-Machines and provides technical support for E-Machines products.*

Dock support using the Duo screen simultaneously with an external monitor. The two screens can show different images or be mirrored to show the same thing. All the docks sense the monitor size through the cable to select the pixel count (640 by 480, 832 by 624, and so on). Some can override this option for more flexible operation with multisync monitors. Many docks support the VGA and SVGA monitors common to DOS- and Windows-based PCs, but most do so at the flicker-prone refresh rates of 60Hz (VGA) and 56Hz (SVGA), producing an irritating image. Only the two E-Machines docks support the flicker-free 72Hz and 75Hz refresh rates of many current VGA monitors. The Newer Technology Color MicroDock does VGA at 72Hz.

The E-Machines Presentor is the only dock that can drive a standard color television monitor (NTSC or PAL) directly. Its convolution circuit does a reasonable job of minimizing the flicker inherent in the interlaced television displays. The Newer Color MicroDock has an NTSC encoder option (less than $100) that does not suppress flicker. The other docks with video output require a standard encoder (prices start at about $400) to produce a TV image. Of these, only the RasterOps docks offer software that supports television format images.



We tested video performance using an Apple PowerBook Duo 210 and Apple 14- and 16-inch monitors. As our results indicate, there is little variation in video performance. Our tests involved calculating the average speed for a series of vertical and horizontal scrolls in Microsoft Excel and Word documents.

Newer Technology	Newer Technology	RasterOps	RasterOps
Color MicroDock	SCSI MicroDock	DuoMate 8	DuoMate 16sc
$345	$175	$499	$649
316/685-4904	316/685-4904	408/562-4200	408/562-4200
800/678-3726	800/678-3726	800/729-2656	800/729-2656
in-line	in-line	wedge	wedge
0.34	0.28	1.08	1.08
NA	NA	NA	NA
NA	●	NA	●
NA	29 as 30, 30 as 29	NA	uses DB-25 plug
NA	NA	●	●
NA	NA	NA	NA
●	NA	●	●
NA	NA	NA	NA
8-bit to 16-inch; 4-bit to 19-inch; 1-bit to 21-inch	NA	8-bit to 21-inch	16-bit to 14-inch; 8-bit to 21-inch
●	NA	●	●
VGA (72), SVGA (72); cable adapter included	NA	VGA (60)	VGA (60)
with encoder	NA	with encoder	with encoder
●/●	●/●	●/○	●/○
1	0.4	6.8	6.8
○	○	●	●
not rated	not rated	unacceptable	unacceptable

Shape and durability All the portable docks are awkward to carry while attached to a Duo. The small in-line models do not raise the back of the Duo and also fit in almost any carrying case (see "Comparing the Docks"). The bulkier wedge models do raise the Duo's back and don't fit into most carrying cases.

Security Many docks use the Kensington security slot, a small opening in the docking station that accepts a security cable. The Duo itself has no such slot. A few docks have a pass-through slot; installing a lock in this slot blocks the release button so no one can remove the dock from the Duo. Many slots aren't pass-through, so a thief can steal the expensive Duo and leave the dock behind.

A Choice of Docks

Whether you want to attach your Duo to an external floppy disk drive or connect it to an Ethernet network, there's a docking station for the job. Here's a quick tour of docks available now, roughly in order of increasing price.

• Apple's PowerBook Duo Floppy Adapter ($109) provides an ADB and floppy disk port, a minimum for the Duo owner who wants to install software and perhaps use a mouse or external keyboard.

• The Lapis SCSI Dock and Newer Technology SCSI MicroDock ($199 and $175, respectively) are nearly identical models that use the same plastic housing as Apple's Floppy Adapter. The only difference between the two docks is that Newer's version supports using the SCSI disk mode cable as a standard SCSI cable. The Lapis dock doesn't offer this option.

• The Newer Color MicroDock ($345), which weighs in at less than half a pound, should appeal to you if you don't want to carry a lot of weight but need to use a CRT monitor on the road and perhaps make presentations with sound.

• E-Machines' Presentor ($499) boasts distinctive features for presentations, with its television output and robust support for monitors of all kinds. Its lack of a power switch is puzzling. If the Duo freezes, the only alternative is to remove the Presentor with the power on. E-Machines says removal should cause no damage. The Presentor's flat, deep case with no base support can exert considerable force on the docking interface; it's the only dock that could create inadvertent trouble if something dropped onto or pulled hard on its back edge.

• Of the two RasterOps docks, the DuoMate 8 ($499) makes sense only if you need to drive 19-inch (1024-by-768 resolution) or 21-inch (1170-by-870) monitors. Otherwise, you're better off spending an extra $90 for the more capable Macintosh Duo MiniDock from Apple (which supports up to 16-inch monitors). The RasterOps DuoMate 16sc ($649) is the only portable dock that supports 16-bit color, but only on 13- and 14-inch monitors. Both RasterOps docks have some nice extras, such as hardware pan and zoom for the monitor, image centering, and adjustment utilities.

• Apple's Macintosh Duo MiniDock ($589) provides all the input and output features of a standard PowerBook, with two slight differences—you need to buy an external floppy drive for your Duo, and the video connector is conventional.

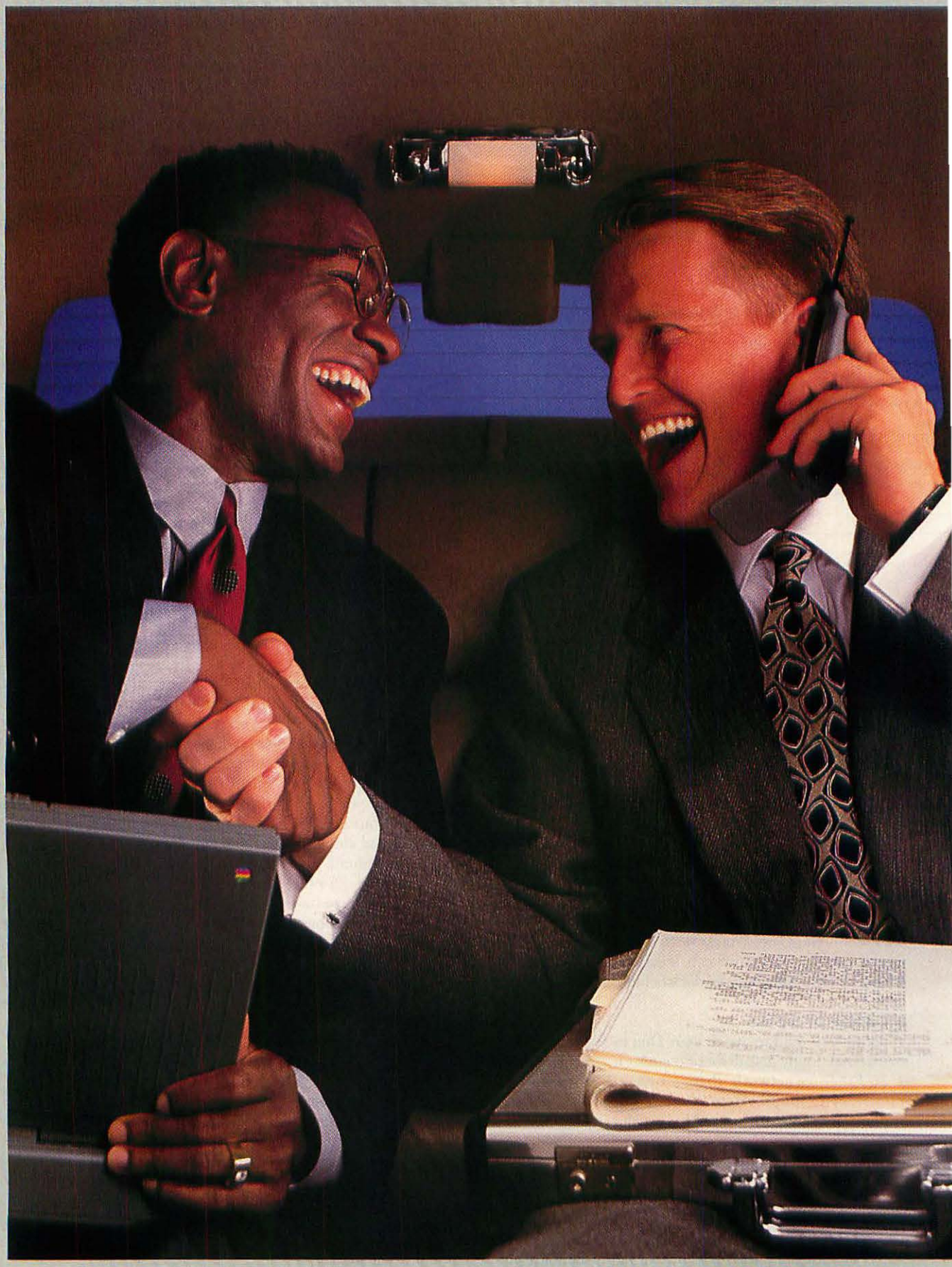
• E-Machines' EtherDock ($699) uses the same case as the Apple Duo MiniDock (SuperMac Technology, which owns E-Machines, makes the Apple MiniDock). In addition to better VGA/SVGA monitor support, the main difference is the Ethernet connector, which replaces the telephone-line connector of the MiniDock. You cannot use an EtherDock and your internal modem at the same time—fine if you have a modem server, a nuisance if you don't. The EtherDock supports only 10BaseT twisted-pair wiring. SuperMac says it is looking into converters for Ethernet thick and thin coax. *Macworld* received a preproduction EtherDock too late to run performance tests, but its Ethernet interface should work faster than Ethernet adapters that attach via the SCSI port.

• Finally, Apple's Macintosh Duo Dock (price starts at $1079) turns the Duo into a full-fledged desktop computer, complete with internal floppy disk drive, space for another hard disk, two NuBus slots, and all the standard ports. A combined Duo and Duo Dock are essentially the equivalent of a Mac IIvx. Installing a NuBus card is a multistep process; you have to take apart and reassemble the Duo Dock in the process. Some older NuBus cards will not fit, although the slots are full length. When docked to this station, the Duo's keyboard and monitor are inaccessible, and you will need to buy replacements (a mouse comes with the Duo Dock). For many users, a separate computer makes more sense.

A Duo in Your Future?

By filling out its Duo product line with the 250 and 270c, Apple makes your buying decision more interesting—and more difficult. Buying a Duo no longer forces any compromise in screen quality or in connectivity. And the new docks give the Duos more flexibility than any other computer. If you don't find portability and flexibility enticing, you probably won't be convinced to buy a Duo. **m**

CARY LU is a *Macworld* contributing editor who now plans to buy a PowerBook Duo.



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Now Up-to-Date, the best-selling calendar software, makes scheduling events, setting reminders, managing to-do lists, and printing calendars amazingly simple. Display your calendar by month, week or day—you choose the view that's right for you. Plus, if you are on a network, you can also keep your associates informed of your schedule.

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by Galen Gruman

Working in 2 Worlds

A GUIDE TO USING THE SAME APPLICATIONS ON MACS AND WINDOWS PCs

When Microsoft finally produced a fast, stable version of Windows in 1991, the world opened up for Macintosh software developers. They could begin to share their precedent-setting wares with millions of DOS-based users. Before then, some corporate systems managers who did not want to support multiple computers and applications throughout their organization restricted Macs to the art department. But Windows 3.1 made the excuse for ghettoizing Macs obsolete.

The pioneering Mac programs—from Microsoft Excel to Aldus PageMaker, from Adobe Photoshop to Claris FileMaker Pro—are now available in Windows versions designed to let Mac and Windows users work on the same files. A few DOS standbys, such as Lotus 1-2-3 and WordPerfect, have reached out to the Mac market the same way.

Developers have done well in making these programs work easily in both environments. (Some confidently use one manual for both platforms; Aldus PageMaker 5.0 and Microsoft Excel 4.0 are examples.) But there are still hurdles and bumps on the road to seamless cross-platform computing.

This article details how to overcome most such problems for the most recent versions of popular cross-platform programs. (Another article in this issue, "Cross-Platform File Transfer," covers what is involved in actually moving data between computers.) I looked at common features in these applications, but there may be other incompatibilities.

A few popular programs are missing from this feature; these were from companies who declined to provide review copies, typically because of in-progress upgrades. These include Aldus FreeHand and Aldus Persuasion (206/628-2320), Fractal Design Painter (408/688-8800), and QuarkXPress (303/894-8888). Others were not yet shipping, including Deneba Software's Canvas for Windows (305/596-5644) and Corel Corporation's CorelDraw for the Mac (613/728-8200). But you'll find that the techniques I describe will still help you use those and other cross-platform products not covered here.

JOHN CRAIG

Common Issues

Even though Microsoft Windows 3.1 has brought a more Mac-like facade to DOS, Windows is not a Mac work-alike. Some of the differences are due to DOS, some to Windows (which, sort of like the Finder, runs on top of the operating system).

Version Compatibility Software does not stand still, so today's cross-platform compatibility may be sacrificed for newer features on one platform. For example, when Quark delivered QuarkXPress 3.1 for Windows in November 1992, the Windows version could read QuarkXPress 3.1 for Mac files—but the reverse was not true. Quark fixed that when version 3.2 for Mac came out—nine months later.

Even if both platforms' compatible versions ship at the same time, there's no guarantee that, say, a Mac service bureau's Windows clients will upgrade when it does. That's why it's important for programs to support the previous version through a Save As option. But not all do. The table "Cross-Platform Capabilities" shows which programs support saving in the previous version's formats.

At worst, the application on one platform may be all but abandoned. Ventura Publisher was compatible across platforms in 1990 with version 3.0, but Ventura Software (recently acquired by Corel) stopped Mac releases with version 3.2 (which merely added System 7.0 compatibility). The Windows version has had two major revisions since then. While there's a DOS utility bundled with the Windows version to create version 3.0 PC (this, and future references to PCs pertain to Windows machines) files (which the Mac version can read), Macintosh users have no access to the new capabilities, such as color separation. Worse, Ventura Publisher is incompatible with System 7.1.

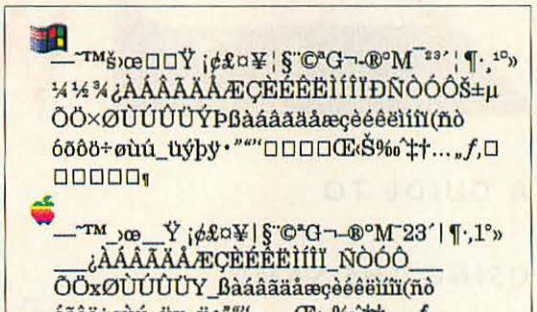
And be warned—just because a company offers a product with the same name for both the Mac and Windows doesn't mean it's a cross-platform program. Examples include Microsoft Works, ClarisWorks, and Peachtree Software's Peachtree Accounting programs.

File Names The Mac supports file names with as many as 31 characters, while DOS (and thus Windows) uses the so-called 8.3 format of an eight-character name optionally followed by a period and an extension of up to three characters used to identify the file type.

Because the 8.3 format works on Macs, cross-platform users should standardize on this format for cross-platform files. Otherwise, when you move files from the Mac to the PC, you get unrecognizable names created by your transfer method. The 8.3 names can be obscure, but the names generated by transfer programs are worse.

The two systems also work differently when identifying files. The Word icon most Macintosh users know becomes the .DOC extension most PC users know. Fortunately, you can configure your transfer application to automatically assign the correct Mac icons to files created on a PC (see the sidebar "Whys and Hows of Extension Mapping").

Fonts Although they both support Adobe PostScript Type 1 and TrueType fonts, Windows PCs and Macs don't always handle these fonts the same way. This is particularly true for Type 1 fonts; since the character sets on the two platforms are different, the character widths are often slightly different. The font names also sometimes differ for the same font (the classic example, Futura Medium on the Mac, is simply Futura on the PC). This means a printer or application will think it lacks the font required for output. Newer Type 1 fonts share the same character widths and font names, however, because type developers have begun to design them for cross-platform use.



Same Font, Different Characters These two samples (Windows, top; Mac, bottom) of international and symbol characters for the TrueType font Century Schoolbook show that the character sets vary.

TrueType suffers fewer of these problems because it was jointly developed by Microsoft and Apple. The most common characters—the letters, numbers, and symbols on all keyboards—are the same. Special characters vary. These include some foreign letters (the Mac has several Greek letters that Windows doesn't, such as Ω, while Windows has several special characters, such as Š and þ, which the Mac doesn't); ligatures (such as fi, not available on Windows); and special symbols (you can get ⌘ and in some fonts on the Mac but not on Windows, and you can usually get ± in Windows but not usually on the Mac) (see "Same Font, Different Characters").

There's nothing you can do to access the missing characters short of using a symbol font; but to address the mismatched character maps and font names, you can use software that translates TrueType and Type 1 fonts across platforms. Two such translation packages—Ares Software's FontMonger ($149.95, 415/578-9090) and Altsys's Fontographer ($495, 214/680-2060)—are available in Mac and Windows versions. (They also let you modify fonts or create your own.)

The latest versions of PageMaker and QuarkXPress also automatically remap characters when transferring files across platforms. This takes care of the most common characters in the most popular fonts. Unfortunately, you can't create your own translation map for unsupported fonts.

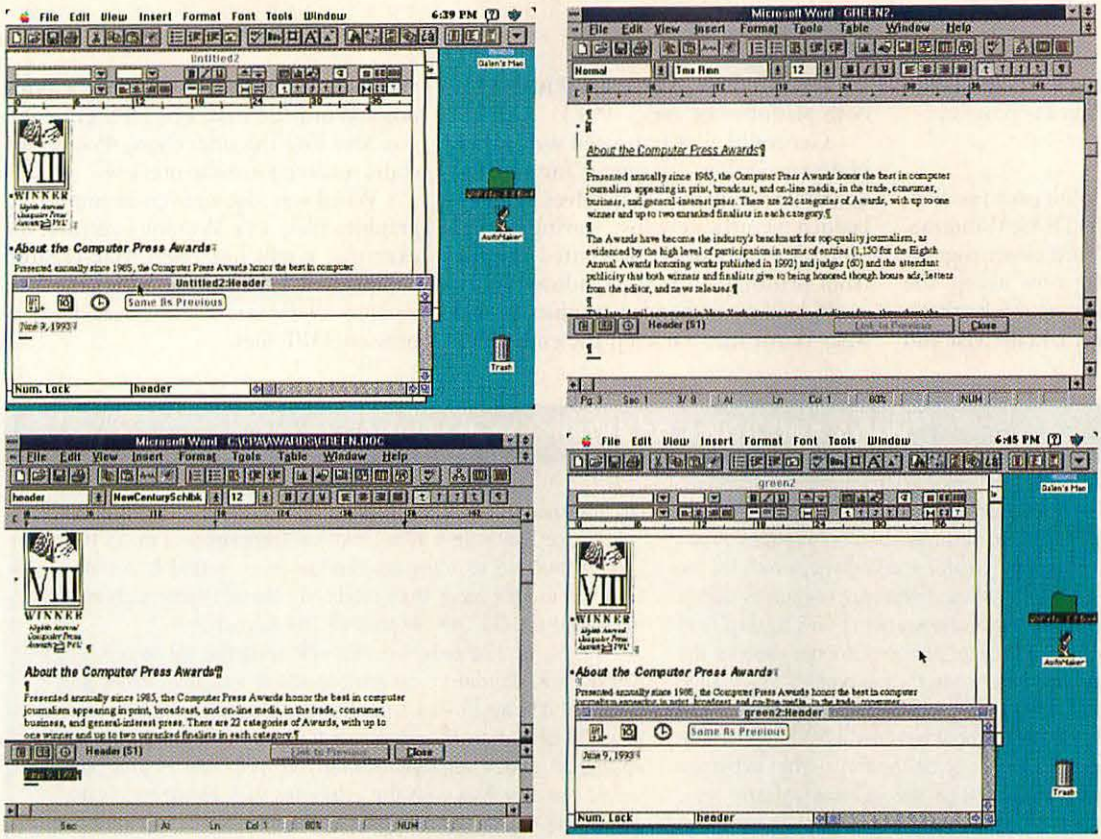
Both programs also automatically translate the names for those fonts whose names differ on each platform (such as Futura). PageMaker goes a step further by incorporating ElseWare Corporation's Panose technology, which categorizes typefaces stylistically and lets applications suggest equivalent or similar fonts when the original is not available.

Consistent character widths ensure that a document does not reflow when it changes platforms; the slight differences between some versions of the same fonts (again, mostly older Type 1) can be devastating in a cross-platform publishing environment. Using translated fonts usually solves the problem.

Common Formats Although most programs use their own file format, some formats transcend a particular application. These are mostly graphics formats, such as EPS, CGM (an object-oriented format found mostly on workstations and non-Mac PCs), PICT, TIFF, and PCX (a widely used bitmap format on non-Mac PCs). But these common formats are not always the same across platforms—and not even within a platform.

- *Graphics* The EPS format has the most variance. On the Mac, Adobe and Aldus have different types of EPS files. Although publishing programs can load both, illustration programs usually cannot. In Windows, the Adobe Illustrator 1.1 version of EPS is the de facto standard. If you need EPS reliability, buy Altsys's $89 EPS Exchange, which translates between Illustrator EPS and Aldus EPS.

The preview header—the image that displays on screen, which is a bitmap representation of the EPS file's underlying PostScript code—can also create problems. Mac applications tend to use TIFF or PICT for the preview, while Windows applications tend to use TIFF or Win-



Not the Same Word Microsoft Word is better at moving documents from Windows to the Mac than the other way. Notice how the graphic and the date in the header were lost going from Mac to Windows (top) but not in the other direction (bottom).

dows BMP. Thus, if you load a Windows-created EPS file into a Mac program, you may get a gray box that lists the file name and creation date. The same is often true if you bring a Mac EPS file into a Windows program. The image prints correctly, since the PostScript code needed by the printer is platform-independent, but you can't easily size or crop the graphic since you can't see it on screen.

For example, you can view CorelDraw's previews on a Mac, but not previews from the Windows version of Adobe Illustrator. Both PageMaker and QuarkXPress (on a Mac or PC) now recognize the Mac EPS headers and CorelDraw's PC EPS header, but neither recognizes the PC EPS header generated by Illustrator or Computer Support Corporation's Arts & Letters Graphics Editor (a Windows technical-illustration program).

There are two solutions to translating the previews:

1. Explicitly save the EPS file with a Mac or PC preview (as appropriate). QuarkXPress is one of the few programs that offers this feature. Mac Illustrator does have an option to save EPS files with a PC preview, but PC programs still can't read that preview.

2. Use a translator program. The general-purpose MacLinkPlus/Translators Pro, $169 from DataViz (203/268-0030), can convert between Mac EPS and PC EPS, but it does not always translate the previews correctly, particularly for color files. TechPool Studios' graphics-only Transverter Pro ($395, 216/382-1234) does better.

The TIFF format also has several variants, including compressed versions and a different internal data format for Mac and Windows. Fortunately, most programs can read both internal data formats, making translation rarely necessary. If it is, MacLinkPlus/Translators Pro can usually do the trick. Some programs, notably Photoshop, also offer a save-to-PC (or save-to-Mac) option.

While Mac applications usually have no trouble reading compressed TIFF files (especially the popular LZW type), some Windows applications do (for example, QuarkXPress for Windows 3.1). If you get a partial or corrupted image when loading a TIFF file, save the original as uncompressed and load it again.

• *Text* Even the common ASCII text-only format varies. Although it doesn't support formatting such as boldface and indents, ASCII was for years the only sure way to move data between applications and across platforms. There are two main ASCII variants: Apple's text-only version and IBM's extended version.

Based on the needs of teletypewriters, ASCII uses two characters to end each line: a carriage return (to move the print head to the beginning of the line) and a line feed (to move the print head down to the next line). Apple decided one character (the carriage return) would do, so ASCII text on the Mac lacks the line feed that PC programs expect to see.

The ASCII standard is defined with 128 characters, but because computer data is 8-bit, there's room for 256. In the days of the original PC, IBM added 128 characters, called extended ASCII. So did Apple, but not the same 128. (This is one reason special symbols and accents often don't transfer correctly.) If you must use ASCII, stick with the 128 standard characters imprinted on your keyboard.

Embedded and Linked Files Many applications embed other files in their documents, such as graphics in a word processing document. But these embedded files don't always transfer across platforms. For example, when I transferred a Windows Word file with an embedded EPS file, the EPS file was replaced with a PICT preview (a translation of the Windows metafile preview for the embedded EPS file), and the file would not print because of a PostScript error. When I returned that file to Windows Word, both the PICT preview and the originally embedded EPS file disappeared completely.

Beware of more complex links, such as publish and subscribe on the Mac and Microsoft's OLE (Object Linking and Embedding) in Windows and in some Mac applications. These technologies make it easier to create composite documents, but most application developers haven't designed their implementations with cross-platform use in mind.

Individual programs have their own idiosyncrasies and strengths that you must also take into account when working cross-

platform. The following evaluations describe these issues for popular programs.

Editing Programs

Microsoft Word With each revision, Microsoft has moved its DOS, Windows, and Mac versions of Word closer together. Their interfaces are now nearly the same, and they read and write each other's formats. (I tested version 5.1a for Mac and 2.0 for Windows. Version 6.0 is due for both platforms by early 1994.)

Generally, files translated well across platforms: tables, character formatting, and styles maintained themselves. But embedded pictures were lost, leaving behind a preview that often prevented the file from printing. In fact, Windows Word could load no embedded graphics from a Mac Word file. To keep the embedded graphics, you must save the file as a Windows Word file first. For EPS graphics, you also lose the underlying PostScript code, retaining just the preview.

Word was also uneven in importing graphics files. The Windows version, for example, could not open Mac-created compressed TIFF files, although the Mac version could read PC-created compressed TIFF files.

WHYS AND HOWS OF EXTENSION MAPPING

A major difference between Macs and DOS PCs is how they identify their files. Mac files have attributes that contain information on the program's creator and file type, which tell the Mac what icon to use for the file and what application to launch if someone double-clicks on the file (or what files to display in the Open dialog box). Inside each file is a four-letter code for the creator and another four-letter code for the type.

DOS has no such counterpart to Mac file attributes, instead relying on each application to know whether a file is readable or not. Usually, DOS applications rely on the three-letter extension (the part of the file name after the period) to identify the file type.

When you move files from DOS to Mac, there is no attribute, so the Mac doesn't know what applications the file is compatible with. Usually, the file type is marked as text (TEXT) or binary (BINA) and the creator as unknown (????) or DOS (MDOS). Mac applications now often recognize this fact and display these files in their Open dialog boxes in addition to their own file types. Adobe Illustrator is one of the exceptions.

When you move files from a Mac to a PC, the attribute is superfluous and often gets stripped out during transfer. But you typically need to rename the file with the appropriate extension once it's on the PC. "Extension Mapping" shows the equivalent DOS extensions and Mac creator and file types.

To get around this translation issue, most transfer products automatically add the appropriate attribute to a PC file transferred to a Mac, and many add the appropriate extension to a Mac file transferred to a PC.

Network-transfer products that handle the DOS-to-Mac mapping include Coactive Connector for Coactive networks, Miramar Systems' Personal MacLAN Connect, Farallon Computing's PhoneNet PC (bundled with Timbuktu) for AppleTalk networks, and Dayna Communications' NetMounter for NetWare (a version of which comes with the $99 DOS Mounter Plus). For disk transfer, the three Mac-based products (DOS Mounter Plus, Macintosh PC Exchange, and AccessPC) do the same. The PC-based products (MacDisk, Mac-in-DOS, and Mac-to-DOS) do not. (See "Cross-Platform File Transfer" in this issue for details on these products.)

Farallon's PhoneNet PC, the network operating system used by Timbuktu, supports only predefined extension mapping. Unfortunately, Farallon's extensions do not reflect current software versions (such as Excel 4.0), and you can't add new extensions or modify file type and creator assignments. Therefore, few if any of your transferred PC files will display the appropriate Mac icon.

If your transfer method does not handle extension mapping, there are three ways to map the DOS extensions to the Mac's file and creator type attributes after the transfer.

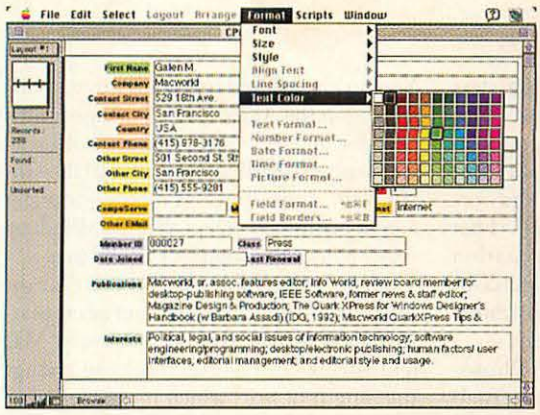
- Use a product like the shareware utility ResEdit to enter the attribute information manually. This can be dangerous, since it lets you change attribute information that might corrupt the file.
- Use DataViz's MacLinkPlus/Translators Pro ($169; 203/268-0030) to translate the file (even if that translation amounts to little more than modifying the attribute, such as in translating a DOS TIFF file to Mac TIFF format).
- Rely on the program that will open the file to see files without the standard type attributes. For example, Word and Excel will display all files and attempt to open them. Both give you a list of formats they think the file may be in. This is the best approach. Older versions of many cross-platform programs would see only files with the attributes they recognize. Fortunately, this appears to be a limit of the past.

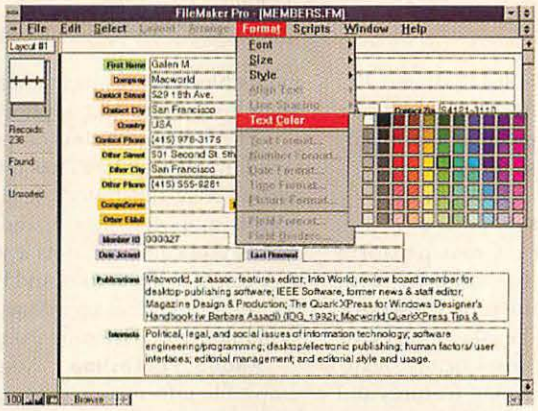
Even outside a network, these methods come in handy—if, for example, you get a file via electronic mail or your transfer program doesn't happen to recognize a particular extension.

Extension Mapping

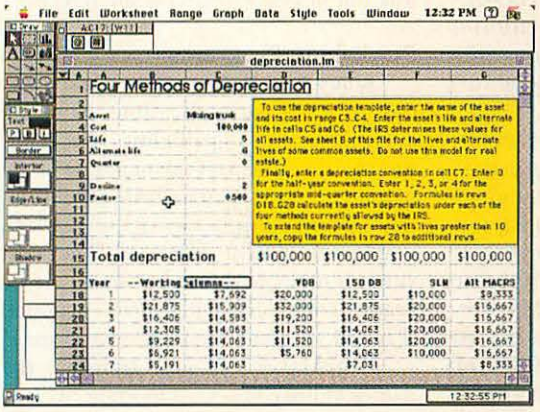
File Format	Mac Creator	Mac File Type[1]	DOS Extension
Adobe Illustrator	ART3	TEXT, EPSF	AI
Adobe Photoshop	8BIM	8BIM	PSP
Aldus FreeHand	ACA3	ACF3	FHA
Aldus IntelliDraw	SPCK	sDoc	IDW
Aldus PageMaker 5.0	ALD5	ALB5	PM5
Aldus Persuasion	PLP1	PRS1	PRS
Claris FileMaker Pro	FMPR	FMPR	FM
Deneba Canvas	DAD2	drw2	CVS
Encapsulated PostScript	[2]	EPSF	EPS
Fractal Painter	FSPS	TIFF[3]	TIF[3]
FrameMaker	Fram	FASL	none
Lotus 1-2-3 Release 4 data	L123	LWKs	WK4
Lotus 1-2-3 format file	L123	123I	FM3
Microsoft Excel 4.0 data	XCEL	XLS4	XLS
Microsoft Excel chart	XCEL	XLC3	XLC
Microsoft PowerPoint	PPT3	SLD3	PPT
Microsoft Word	MSWD	WDBN, WDPC	DOC
PICT	[2]	PICT	PCT
QuarkXPress	XPR3	XDOC	QXD
Text only (ASCII)	[2]	TEXT	TXT
TIFF	[2]	TIFF	TIF
Ventura Publisher	VPUB	VCHP	CHP
WordPerfect	WPC2	WPD2, WPPC	WP5, WP

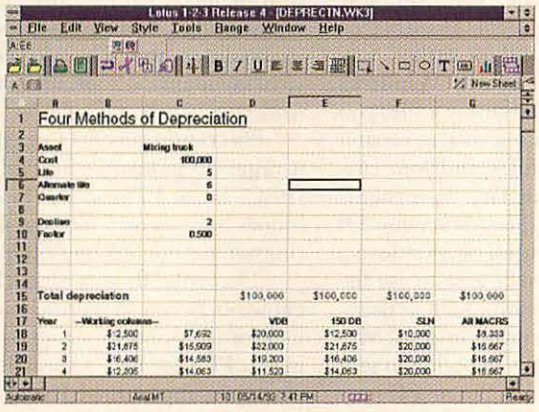
[1] If two types are listed, the second is used for Windows files. [2] Use the creator for the program you want to load when you double-click on a file with this type. [3] Supports other common Mac and Windows bitmap formats as well.





Software Twins It's hard to distinguish FileMaker Pro for Mac from FileMaker Pro for Windows. Only the size of the color bars behind the field labels differs noticeably.





Lost in Translation Fonts, notes, and spacing often do not transfer between the Mac and Windows versions of Lotus 1-2-3. Other applications that keep essential information but not all formatting include WordPerfect.

Windows Word has several formats for date and time stamps in documents, while Mac Word has just one for each. The Windows formatting imports into Mac Word, but only the time format from Mac Word imports into Windows Word—any dates disappear. But a date created in Windows, moved to the Mac and back to Windows, does not disappear. (See "Not the Same Word" for a look at this uneven transfer.)

WordPerfect WordPerfect reflects the old approach to cross-platform compatibility: the Mac version must do most of the work. For WordPerfect, the Mac version can read and write the Windows format, but not vice versa. (I tested version 2.1.3 for Mac and 5.2 for Windows. Version 3.0 for Mac and version 6.0 for Windows are due by early 1994.)

In WordPerfect, fonts simply do not map correctly across platforms, even when the same fonts reside on both computers. The mismatch occurs both for the font itself and the type size, which can vary a point or two from the original. Other formatting transfers successfully. Also, EPS files disappear during cross-platform transfer, although the picture box remains. TIFF files transfer successfully.

Data-Oriented Programs

Claris FileMaker Pro FileMaker Pro marked Apple's foray (through its Claris subsidiary) into the Windows market and shows that Apple can create Mac-quality software on other platforms. FileMaker is virtually identical across platforms, with the only differences being those imposed by the Mac or Windows, such as different font metrics (see "Software Twins"). (I tested version 2.1v1 for both platforms.)

The program is also network-savvy, letting you access FileMaker files across an AppleTalk, Novell IPX (NetWare), or NetBIOS network simply by opening the files. If the file is marked as multiuser, users on different platforms can simultaneously view it (only the first user to open the file can edit field settings). This network access is great, but the unintended shutdowns that often occur in a multiplatform configuration can damage your database files, since FileMaker can lose data when a file is not closed properly.

Lotus 1-2-3 The dominant DOS spreadsheet is very graphical in its Mac and Windows versions, but files transferred between the two platforms lose much of their graphical formatting (see "Lost in Translation"). The most important parts of the files—the data, calculations, and relations—are maintained, however. (I tested Mac version 1.1 and Windows version 4.0.)

Fonts in Lotus documents are among the first elements to disappear; most translate to the system defaults (like Helv and Tms Rmn in Windows and Times and Helvetica on the Mac), although attributes such as boldface, italics, and point size remain. If you copy the file back to the original platform, the original fonts are restored. This is also true for other features that don't translate, such as notes and some forms of cell borders.

Moving files back and forth is tricky. Windows treats Mac files like .WK3 files (Release 3 format) without any associated formatting unless you use the Save As dialog box in Mac 1-2-3 and select the 123 DOS (.WK3,.FM3) option, which saves both the worksheet file and the format file; don't use the 123 DOS (.WK3) option. When moving files from Windows to the Mac, you also need to save in .WK3 format (which means you lose Release 4–specific features) and copy over the .FM3 file as well.

Microsoft Excel With Excel 4.0, Microsoft shows how seamless a cross-platform application can be. The file format for the two versions is the same, and the interface is almost identical. I encountered no problems with graphics, fonts, macros, or other ancillary elements.

The only difficulty I had was in using OLE-embedded objects. I embedded a small Word document into Excel spreadsheets to see if OLE worked across platforms. Using a Mac Excel file with an embedded Mac Word file, Windows Excel was able to launch Windows Word and properly display the text document. But the reverse was not possible: using a Windows Excel file with an embedded Windows Word file, Mac Excel was unable to launch Mac Word and display the text document. The system would lock up when I tried to close the Excel file. (I used a Centris 610 with 12MB of RAM

for testing and an 80486DX-based PC with 16MB of RAM.) But I didn't expect it to work at all, given the system peculiarities that OLE must contend with.

Graphics Programs

Adobe Illustrator Cross-platform illustration software has suffered from halfhearted compatibility, as Illustrator well demonstrates. The Mac and Windows versions have historically leapfrogged each other, keeping features and file formats out of sync. With the new Mac version 5.0, there's still the extra step of saving Mac files in 4.0 (or earlier) format to make them usable by Windows Illustrator. When you transfer a file, you lose access to new features, such as version 5.0's new plug-in modules, and your custom spot colors translate to process (CMYK) equivalents. (I tested version 5.0 on the Mac and version 4.0 on Windows.)

People also need to be able to use the graphics in other programs, such as page-layout software. For several versions, Mac Illustrator has had a Save As option to give files a PC preview header. But no PC program tested could understand that preview, resulting in the gray box that symbolizes a printable but unviewable EPS file—that's the same result you get if you use the Mac preview in the first place. The Windows version has no Save As option, and its files show up as the same gray box when loaded into Mac applications.

The leading illustration program for Windows, CorelDraw, has difficulty importing Mac Illustrator files (in the versions it supports: 88, 1.1, and 3.0). That means you can't use it as a way station between Mac illustrators and PC publishers, nor can you set up a Mac Illustrator/Windows CorelDraw environment.

Adobe Photoshop All of Photoshop's file information is stored internally in an uncomplicated format, so designers working on images across platforms see no differences. The two versions offer virtually identical tools and internal formats (see "Carbon Copies").

Photoshop benefits from the fact that it relies on industry-standard formats—JPEG, DCS, EPS, and TIFF—although it does have its own internal format, too. (I tested version 2.5 on both platforms.)

The only flaw is that there is no choice between Windows and Mac format for the preview header when exporting to EPS format. That will affect you when you import the EPS file into a program that can't read the preview (the image will still print correctly). Photoshop itself can read either EPS preview.

Microsoft PowerPoint With version 3.0, this presentation-graphics program has become a true cross-platform program. You no longer need to use a separate translator with the Apple File Exchange utility: the Mac and Windows versions both read each other's formats. All materials—including imported graphics—transfer across platforms, except that the Windows version does not support QuickTime.

The only problem I had was that the leading changed slightly between platforms. It grows from Windows to Mac and shrinks in reverse. This can change the length of text, which means text may leak out of boxes or fall off the screen.

Publishing Programs

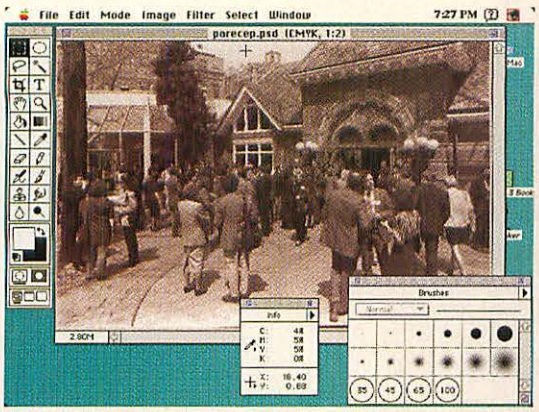
Aldus PageMaker PageMaker was one of the first applications to tackle cross-platform compatibility. This is impressive, because page layout is one of the hardest areas to maintain compatibility in, due to the multiple formats of text and graphics documents imported. The latest version of PageMaker enhances an already solid cross-platform product. (I tested version 5.0 on both platforms.)

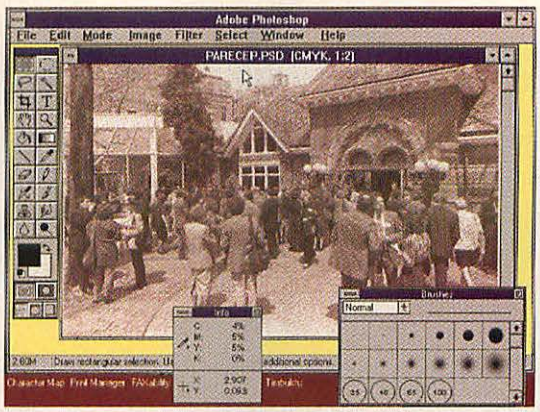
PageMaker can now translate the names of linked files—important because of the differences in Mac and DOS file names. Previously, you had to ensure that you used DOS's 8.3 format to name linked files if you planned to move your Mac layout file to a PC. PageMaker also supports OLE links across platforms.

Cross-Platform Capabilities

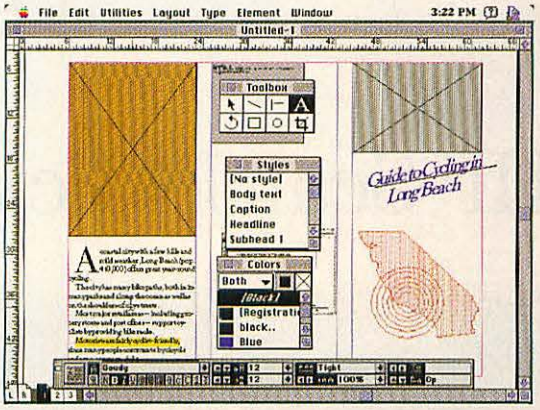
Company	Program	Version Tested	Phone	Toll-Free Phone	List Price	Opens Cross-Platform Files Directly	Saves to Previous Version
Adobe Systems	Adobe Illustrator	Mac 5.0	415/961-4400	800/833-6687	$595	●	●
		Windows 4.0	415/961-4400	800/833-6687	$695	●[1]	●
	Adobe Photoshop	Mac 2.5.1	415/961-4400	800/833-6687	$895	●	●
		Windows 2.5	415/961-4400	800/833-6687	$895	●	[2]
Aldus Corporation	Aldus PageMaker	Mac 5.0	206/628-2320	800/627-8880	$895	●	○
		Windows 5.0	206/628-2320	800/627-8880	$895	●	○
Claris Corporation	FileMaker Pro	Mac 2.1v1	408/727-8227	800/325-2747	$399	●	[3]
		Windows 2.1v1	408/727-8227	800/325-2747	$399	●	[3]
Frame Technology	FrameMaker	Mac 3.0	408/433-3311	800/843-7263	$795	●	○
		Windows 3.0	408/433-3311	800/843-7263	$795	●	[2]
Lotus Development Corporation	Lotus 1-2-3	Mac 1.1	617/577-8500	800/343-5414	$495	○	[2]
		Windows 4.0	617/577-8500	800/343-5414	$495	●[4]	●
Microsoft Corporation	Microsoft Excel	Mac 4.0	206/882-8080	800/426-9400	$495	●	●
		Windows 4.0	206/882-8080	800/426-9400	$495	●	●
	Microsoft PowerPoint	Mac 3.0	206/882-8080	800/426-9400	$495	●	○
		Windows 3.0	206/882-8080	800/426-9400	$495	●	○
	Microsoft Word	Mac 5.1a	206/882-8080	800/426-9400	$495	●	[3]
		Windows 2.0	206/882-8080	800/426-9400	$495	●	●
Quark	QuarkXPress	Mac 3.2	303/894-9922	800/788-7835	$895	●	○
		Windows 3.12	303/894-9922	800/788-7835	$895	●	[2]
WordPerfect Corporation	WordPerfect	Mac 2.1.3	801/225-5000	800/321-4566	$495	●	●
		Windows 5.2	801/225-5000	800/321-4566	$495	○	[3]

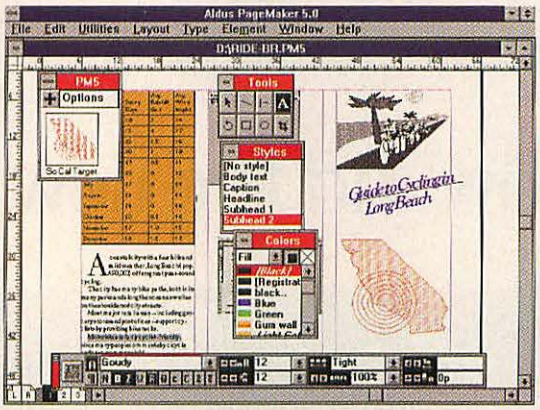
● = yes; ○ = no. [1] Must be in version 4.0 or earlier format. [2] There is no previous version on this platform. [3] Previous version uses same file format as current version. [4] Without color and font formatting; Save As needed to retain formatting.





Carbon Copies Photoshop uses industry-standard formats and an identical feature set across platforms. The difference in image clarity here is a result of the use of 16-bit color on the Mac (left), compared with 8-bit on the PC.





Dealing with Differences A PageMaker layout looks virtually identical across platforms, with colors, formatting, and graphics transferring smoothly. Only the previews for graphics that were not copied along with the Windows layout file are missing in the Mac screen (left).

PageMaker translates its internal preview headers between PICT and Windows metafile format; it uses this preview for all graphics copied into or linked to the layout. If the linked graphic no longer exists, however, the preview is not translated. But if you move the same layout back to the originating platform, the internal preview is reinstated (see "Dealing with Differences").

However, one important feature does not transfer: library files, commonly used for graphics and text blocks. (QuarkXPress, which has a similar feature, likewise does not support cross-platform libraries.)

QuarkXPress When QuarkXPress for Windows was introduced a year ago, the Windows 3.1 version could read Mac 3.1 files but not vice versa. With the recent release of Mac version 3.2, both versions can now read each other's files. (I tested version 3.2 on the Mac and 3.12 on Windows.)

The Windows version lacks the new Mac features, such as EfiColor color calibration, flip controls for picture and text boxes, skewed boxes, interactive text resizing, and certain XTensions, such as Font Creator. Custom frames created by the Frame Editor on the Mac are replaced with solid frames when imported into Windows, since the Windows version has no Frame Editor.

If you use EfiColor profiles on the Mac and transfer the document to Windows, the profiles are removed (although Quark recently began offering a fix). If you move the document back to the Mac, the Profiles option in the Style menu is grayed out for each picture box; you must globally reapply profiles. The new Pantone Pro-Sim, Process, and Uncoated color models on the Mac are translated to their CMYK equivalents when documents using them are moved to Windows.

Any graphics not supported by the platform version are replaced during printing with their PICT previews. However, the graphics links remain, so if you move the document back to the original platform, the graphics are again available for printing. Some PICT previews from the Mac and some metafile previews on Windows won't translate correctly. You must reimport or update the link to the graphic to generate a new preview.

All styles, color definitions, hyphenation exceptions, kerning and tracking settings, and document preferences are retained. But the global QuarkXPress preference files cannot be shared across platforms. Likewise, libraries and auxiliary spelling dictionaries cannot be shared.

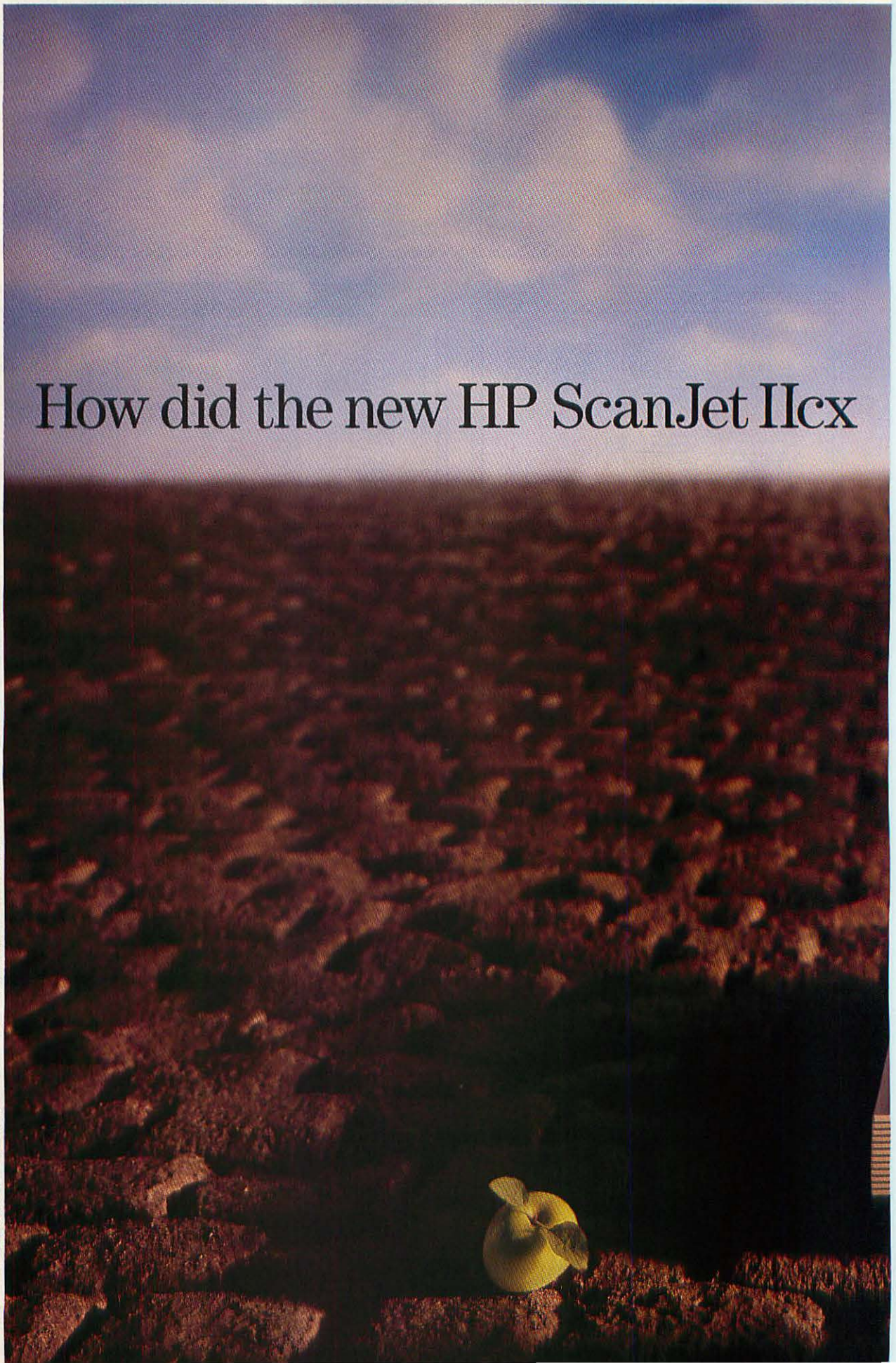
Frame Technology FrameMaker Cross-compatibility is nearly effortless for FrameMaker, a technical-document publishing program first ported from Unix to the Mac and then to Windows. One reason is that FrameMaker copies all imported text into its layout, so there's no need to worry about whether a word processing format is supported across platforms. The same is true for copied-in graphics. For linked graphics, FrameMaker supplies import filters for all common formats. (I tested version 3.0 on both platforms. Version 4.0 shipped as this went to press.)

Like other publishing programs, FrameMaker lets you substitute fonts for ones the document's originating computer has but the current one does not. And special characters not available on the current platform temporarily appear as question marks (these special characters reappear when the document is back on its original platform).

Mix-and-Match Future

The day may come when you can pick your favorite hardware and operating system from a smorgasbord of Pentiums, 486s, Alphas, and PowerPCs for the CPU and from Macintosh, Unix, Windows NT, and NextStep for the operating system. By then, most business applications should be available for any combination. Or so the pundits say.

In the meantime, the vast majority of the world uses the Mac or DOS-based PCs (with or without Windows) with Intel or compatible CPUs. Today, you can pick either system and choose your favorite software—and still work easily with neighbors, clients, and colleagues. That's particularly important for Macintosh aficionados seeking to integrate the Mac into a corporate environment dominated by PCs. The result is that individuality and standardization can coexist, and that puts the *personal* back in personal computing. **m**



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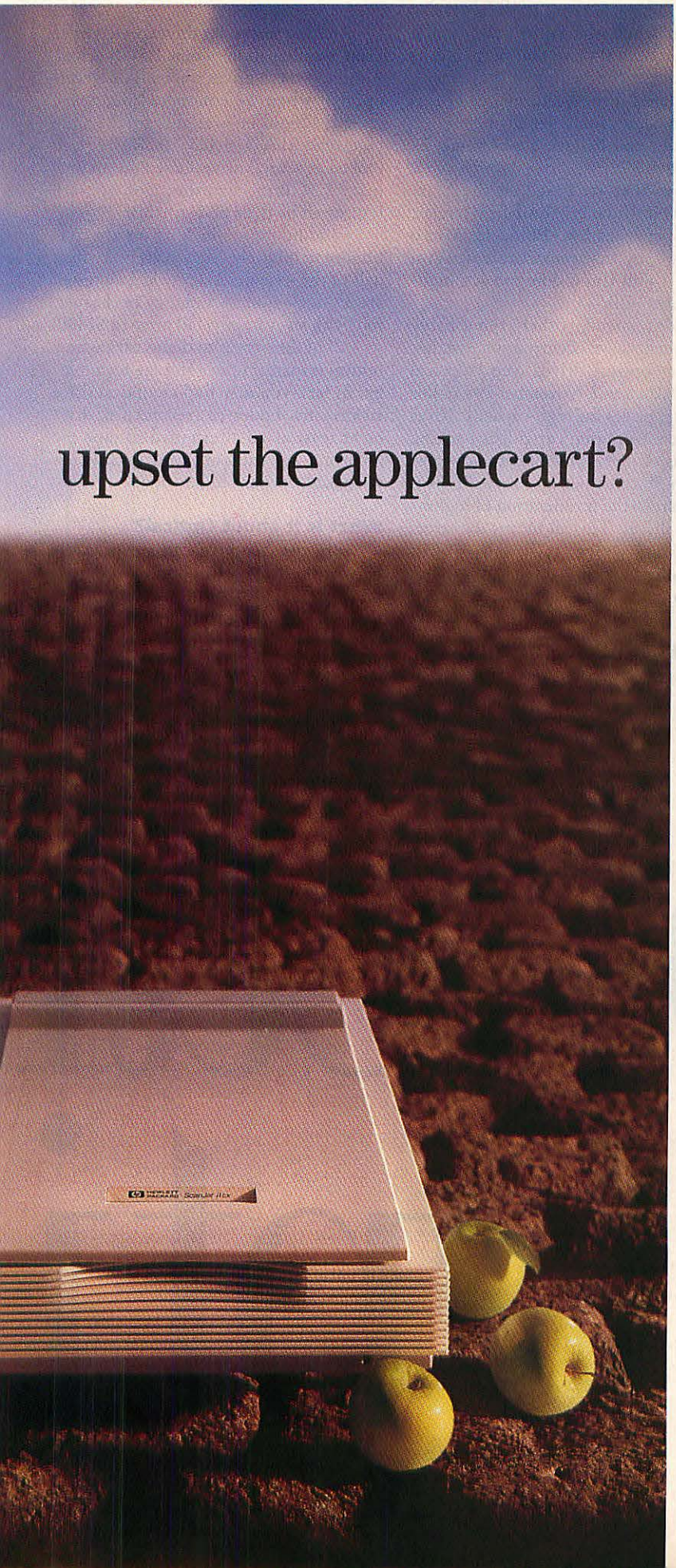

By being the only Mac scanner that handles text as well as it handles graphics. $1,179

Finally, there's a scanner that takes text as seriously as it does graphics. Hewlett-Packard introduces the HP ScanJet IIcx. The color scanner that brings scanning performance to a whole new level. And leaves the competition picking up the pieces.

The HP ScanJet IIcx offers the best text scanning in its class. Featuring HP AccuPage technology, which enhances third-party software, this new scanner deftly handles a wide range of documents. It accurately recognizes text in small point sizes and unusual fonts. Even text on colored backgrounds and in tables–documents that would send other Mac scanners scrambling. An optional document feeder makes it even more efficient.

With 1600-dpi enhanced resolution (400-dpi optical), the HP ScanJet IIcx scans graphics with unmatched clarity and accuracy. 24-bit color provides a palette of 16.7 million colors and 256 levels of gray. And to make sure that those colors stay true, this scanner supports the Apple ColorSync color matching system. Easy-to-use HP DeskScan software and Adobe's Photoshop™ LE image editing software come in the box. An optional transparency adapter scans photos, slides and transparencies. To save time, there's one-pass color scanning. And to simplify things, there's a TWAIN interface,which means you don't have to leave the application you're working in to scan.

These sophisticated features have not come at the expense of simple design. The HP ScanJet IIcx was made for the Mac from the ground up, giving you easy installation and trouble-free operation. All backed by HP's legendary quality and reliability. In the unlikely event that your HP ScanJet IIcx should require service, your one year warranty entitles you to a replacement scanner within 24 hours.

To learn more about the HP ScanJet IIcx scanner, call 1-800-SCANJET (1-800-722-6538), Ext. 7801.* Once you see what the HP ScanJet IIcx can do, everything else will look a little less polished.

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Optical Opti

MW LAB

MACWORLD LAB PUTS 44 OPTICAL DRIVES THROUGH THEIR PACES

BY TIM WARNER

Last year when Macworld Lab found a rewritable optical drive that outpaced its nearest direct competitor by 16 percent, we wondered if the performance of this storage medium could get any better.

Would you believe a whopping 25 percent better?

Drives that are based on the MaxOptix Tahiti IIm mechanism beat out last year's speed leader, Pinnacle Micro PMO-650, by that remarkable margin. And the Tahiti IIm is doing so at a higher capacity, 1GB.

Besides speed, other remarkable developments have occurred since we last looked at optical drives (see "Optical Update," *Macworld*, November 1992). For one thing, prices for high-capacity drives have been dropping; cartridges packing hundreds of megabytes of data now cost less than 50 cents per megabyte. This is due in part to the proliferation of higher-capacity drives. This all means the street prices for 5¼-inch 1GB and 650MB drives should come down to around $3500 and $2000, respectively.

Another reason for this expected price drop is anticipation of new 1.3GB drives. Although these drives were still in development when we conducted our tests, several should be available by the time you read this article. Macworld Lab looked at several drives based on preliminary 1.3GB mechanisms, and we were impressed by their performance.

In addition, 3½-inch drives are continuing to multiply. This year, more than half of the 44 units Macworld Lab tested are 3½-inch models, and they're cheaper, too, with an average retail price of $1400.

All of this serves to demonstrate how optical is maturing as a storage technology. In fact, you may find an optical drive an attractive option as a second hard drive or at least as an alternative to tape for archiving—all without having to clean out your bank account to buy one.

What Is It about Optical?

Despite the many functional parallels between optical drives and hard drives, there are important differences between them. Take reading and writing, for instance. Hard drives have lightweight heads with tiny magnets that fly low over each surface of a stack of platters.

PHOTOGRAPHS BY ROBERT FERRY

Top to bottom: ClubMac Epson OMD 5010, APS Technologies 128 MO, ClubMac Sharp JY-750, and PLI Infinity MaxOptical IIm.

ons

By comparison, magneto-optical (MO) drives' heads use a laser to heat spots on a disk while a large magnet on the reverse side of the disk changes the polarity of these heated spots to represent either zeros or ones. These optical heads glide high above the surface of the media on one side of a single platter. The distance between the optical head and the media aids removability. At the same time, all of the equipment necessary for reading and writing data to optical cartridges makes the heads very heavy.

But some drives reviewed here have an answer to this weighty problem—split-head optics. Split-head optics eliminate this problem by taking the heavier components of the head, like the laser and focusing apparatus, and making them stationary. With fewer parts, the optical head is lighter and thus can move over the disk faster than a conventional MO head can.

MW LAB Optical Drive Speed Tests

All times are in seconds.

Relative Speed
- 100% (Fastest)
- 90%–99%
- 80%–89%
- 70%–79%
- 0%–69%

The drives are listed from overall fastest (top) to slowest (bottom) in each category. To determine rankings, Macworld Lab indexed test results against the fastest drive in each test. Thus, for 3½-inch drives, the FWB hammerDisk 130 gets an index number of 1.00, and the Maximum Storage Cachet System 5 gets a 0.67. Index numbers for overall performance are listed to the left of the product names.

Some manufacturers ship with Write Verify on and others ship with it off—in some cases users can switch between the two options. We tested all drives in their default configuration, meaning that some drives were tested with Write Verify on and others with it off. Having Write Verify on may increase the time it takes for a drive to save, sort, or write. Likewise, drives with Write Verify off may perform these operations at a slightly faster rate.

Mechanism Key
A = Alphatronix
E = Epson
F = Fujitsu
I = IBM
M = Matsushita
MO = MOST
O = Olympus
OP = Optima
P = Pinnacle
R = Ricoh
S = Sony
SH = Sharp
T2 = MaxOptix Tahiti II
T2M = MaxOptix Tahiti IIm

		3½-inch Drives	Open	Save	Sort	Read	Write	Write Verify
Overall Fastest	1.00	FWB hammerDisk 130 (M)	150.5	231.7	227.2	24.0	69.3	OFF
	0.90	Ocean Microsystems Vista V256 (ext) (MO)	173.8	238.7	229.0	26.0	79.3	OFF
	0.90	Liberty Systems 115 Series 256MO (MO)	173.1	239.7	244.1	27.4	77.4	OFF
	0.84	DGR Technologies DGR 256REM (MO)	191.8	244.6	258.1	26.9	79.2	ON
	0.84	Olympus Image System MOS 300S (O)	185.6	241.0	210.7	38.7	92.5	OFF
	0.83	Mirror Envisio SmartStack 128MB Optical (M)	183.1	241.4	247.5	42.7	70.4	OFF
	0.83	APS Technologies 128 MO (E)	187.0	241.4	220.5	38.4	90.2	OFF
	0.83	Mirror 128MB Optical Drive (M)	183.1	242.4	246.4	43.4	70.8	OFF
	0.83	Microtech International Genesis 120E (E)	186.4	244.5	221.8	38.8	91.3	ON
	0.82	Optical Access International RD/Aria (E)	187.5	242.6	214.8	45.7	90.5	ON
	0.81	ClubMac Epson OMD 5010 (E)	187.5	244.4	218.6	46.9	92.6	ON
	0.80	ETC Peripherals DataDrive 128R (E)	187.5	244.0	228.6	45.8	93.0	OFF
	0.79	GCC Ultradrive 120MO (I)	197.1	272.2	233.5	37.7	97.9	ON
	0.78	CMS Enhancements P128MO (E)	192.0	256.3	239.0	46.6	96.1	ON
	0.77	Procom Technology MEOD 128 (S)	195.5	262.1	277.0	46.1	73.5	ON
	0.77	Optima Technology DisKovery 128MO (OP)[1]	195.6	255.6	275.5	53.4	74.4	ON
	0.76	Loviél 128SR (S)	204.1	264.4	266.9	45.9	85.4	ON
	0.75	Ricoh Transporter Mac/e (R)	208.3	273.9	242.2	42.4	97.9	ON
	0.75	Mass Microsystems DataPak MO 128 (S)	201.2	260.9	282.7	56.6	75.3	ON
	0.75	Dynatek ROS128 (S)	202.0	262.2	268.1	65.7	74.4	OFF
	0.74	Focus Enhancements 128MB Optical (R)	208.8	281.0	243.1	43.3	98.5	ON
	0.74	Relax Technology Ricoh 3010E (R)	208.6	275.9	240.8	50.3	97.8	ON
	0.73	Plasmon Data Systems RF-3010 (M)	208.8	279.6	243.3	50.6	99.2	ON
	0.73	La Cie Cirrus Optical (M)	209.3	282.4	246.7	50.3	98.4	ON
	0.72	MacProducts USA Magic 128 (F)	217.5	273.5	265.9	41.9	109.7	ON
	0.72	Fujitsu Computer Products DynaMO 128 (F)[2]	218.9	271.8	264.4	48.2	109.3	ON
	0.70	PLI Infinity Optical 3.5" (S)	222.4	296.7	277.7	43.9	101.6	ON
	0.67	Maximum Storage Cachet System 5 (S)	231.2	306.7	283.3	56.7	101.4	ON
		5¼-inch Drives						
	1.00	PLI Infinity MaxOptical IIm (T2M)	178.4	222.9	69.5	31.6	57.0	ON
	0.94	Alphatronix Inspire II F Series (A)[3]	146.9	189.3	200.7	43.1	27.8	ON
	0.78	Storage Dimensions MacinStor 1000EO (T2)	174.0	241.4	195.1	32.2	99.3	ON
	0.75	Pinnacle Micro PMO-650 (P)	275.0	306.4	119.0	48.8	45.9	OFF
	0.67	Ricoh Hyperspace Mac/e (R)	190.5	247.5	245.7	46.2	94.1	ON
	0.66	Relax Technology Ricoh 5031E (R)	191.8	247.7	243.5	46.8	94.1	ON
	0.64	Focus Enhancements 650MB Optical (R)	201.9	261.8	246.2	46.8	96.3	ON
	0.57	Dynatek ROS600 (S)	232.1	296.2	274.4	48.7	100.1	OFF
	0.57	Liberty Systems 115 Series 650MO (SH)	216.5	291.6	309.1	53.2	106.6	OFF
	0.56	ClubMac Sharp JY-750 (SH)	217.8	289.8	301.8	60.8	107.1	ON
	0.54	Optima Technology Concorde 600MO (OP)[1]	245.4	325.6	301.8	47.7	100.5	ON
	0.54	Procom Technology MEOD 650 (S)	245.2	327.2	304.1	48.1	99.9	ON
	0.53	DGR Technologies DGR 650REM (S)	246.2	312.3	303.5	61.5	100.3	ON
	0.44	Optical Access International RD/Express (R)	298.6	401.7	339.8	59.6	142.8	ON
	0.44	Microtech International Genesis 650 (SH)	381.4	456.8	379.4	52.4	101.2	ON
Overall Slowest	0.35	Plasmon Data Systems RF-7010 (M)	356.0	425.6	358.2	95.3	216.2	ON

[1]Drive is based on Sony mechanism. [2]The Fujistu DynaMO bundle is also available from CharisMac Engineering, MacDirect, and Third Wave Computing. [3]Drive is based on Hewlett-Packard Corsair mechanism.

Another barrier to opticals' bid to catch up with hard drives is the space between the head and the magnet. This space provides an easy path for you to insert the cartridge safely. But the magnet in an MO drive is massive and distant from the media. Because of its size, the magnet cannot switch polarity fast enough to write a pattern of ones and zeros in a single pass. To write over existing data, the drive must first erase the track containing the data by writing all zeros, and then it must switch the polarity of the magnet to write the ones.

To read data, MO drive lasers use a low-power mode so that data is not altered. The laser beam reflects off the surface of the disk and back through the lens to a sensor that distinguishes the ones from the zeros.

But the second pass is what is holding back the performance of optical drives, and manufacturers have been working hard to design single-pass magneto-optical mechanisms. One result of this work is the introduction of phase-change drives.

For our tests, we received one phase-change unit, the Plasmon Data Systems 5¼-inch RF-7010 drive, which is based on a Matsushita LF-7010 mechanism. Panasonic also has a phase-change drive, but the company was unable to provide us with software before the end of our testing.

Phase-change drives write data in a single pass by changing the reflective properties of the media. Because the heat of the laser alone changes the structure of the material, no magnet is required.

But phase-change is not yet the answer to creating a single-pass drive. Our tests found the phase-change drive to be slower than the MO drives. This is chiefly because phase-change also makes a second pass, in this case to verify the data. As you read this, fast MO drives with single-pass writes are still at least 18 months away.

In the meantime, many drives are doing their best to speed up their read-write times. The modus

The FWB hammerDisk 1300FMF (top) and the Alphatronix Inspire III GG are among several new optical drives based on 1.3GB mechanisms that should be available soon. Other manufacturers of these high-capacity drives include Pinnacle Micro, MicroNet Technology, PLI, Iomega, CharisMac, and Optical Access International.

HOW DRIVES ENSURE DATA INTEGRITY

All but a handful of the optical drives we tested have a feature, called write verify, as a default setting. Standard magneto-optical drives make two passes on writes: one to erase and one to write data. A write-verify feature ensures data integrity by making a third pass over the disk, reading back what it has just written and comparing it with the original data. Obviously, write verify slows optical drive performance, but most people think it is worth the wait.

Configuration options for write verify come in four flavors, the most common of which offers verification as the default, with a user option to disable it. This setting gives users the greatest protection while maintaining their freedom to choose. Much less common is no verification as the default with the freedom to enable it. This method—used by FWB, vendors who bundle FWB's Hard DIsk ToolKit Personal Edition with their drives (Liberty, Olympus, and MacDirect), and Pinnacle Micro—implies a confidence in the soundness of optical media that few share. Then there is verification with no option to disable it, which is used by Optima, Microtech, Mass Microsystems, Procom, Fujitsu, and GCC. And finally, there is no verification and no option to turn it on—only three vendors, Dynatek, ETC, and Mirror, ship their drives without the verification safety net.

Without verification you run the risk of losing data, but the performance for writes increases by about 20 to 30 percent, depending on the application.

Vendors are currently working to get around the speed problem while ensuring the safety of your data. Already the high-end drives have robust error-correction schemes.

Further advances in optical drive technology should come in the next two years. Stay tuned.

Shedding Light on Optical Drives

Company	Product	List Price	Form Factor/ Media Capacities Supported [A]	Technology	Warranty	Tested	Phone	Toll-Free Phone	Tech Support
Alphatronix	Inspire II F Series	$4495	5.25/1GB, 650MB	MO	1 year	yes	919/544-0001	none	very good
	Inspire II G Series	$4995	5.25/1GB, 650MB	MO	1 year	no	919/544-0001	none	very good
	Inspire III FF Series	$4495	5.25/1.3GB, 650MB	MO	1 year	no	919/544-0001	none	very good
	Inspire III GG Series	$4895	5.25/1.3GB, 1GB, 650MB	MO	1 year	no	919/544-0001	none	very good
APS Technologies	128 MO	$899 [B]	3.5/128MB	MO [C,D]	1 year	yes	816/373-5800	800/235-2752	good
CharisMac Engineering	CharisMac DynaMO 128	$1295 [E]	3.5/128MB	MO [C,D]	1 year	no	916/885-4420	800/487-4420	not tested
	CharisMac Tahiti IIm	$3995	5.25/1GB, 650MB	MO	1 year	no	916/885-4420	800/487-4420	not tested
	CharisMac Tahiti III	$5995	5.25/1.3GB, 1GB, 650MB	MO	1 year	no	916/885-4420	800/487-4420	not tested
ClubMac	Sharp JY-750	$1829	5.25/652MB, 594MB	MO, WORM	1 year	yes	714/768-1490	none	very good
	Epson OMD 5010	$959	3.5/128MB	MO [C,D]	1 year	yes	714/768-1490	none	very good
	Fujitsu M2511A	$959	3.5/128MB	MO [C,D]	1 year	no	714/768-1490	none	very good
	Teac OD3000	$879	3.5/128MB	MO [C,D]	1 year	no	714/768-1490	none	very good
	Ricoh 3100E	$929	3.5/128MB	MO [C]	1 year	no	714/768-1490	none	very good
	Ricoh 5031E	$2249	5.25/650MB, 594MB	MO [C]	1 year	no	714/768-1490	none	very good
	MaxOptix Tahiti II	$2999	5.25/1GB, 650MB	MO	1 year	no	714/768-1490	none	very good
CMS Enhancements	P128MO	$1921	3.5/128MB	MO	1 year	yes	714/222-6000	800/788-4267	not tested
	P256MO	$2846	3.5/256MB, 128MB	MO	1 year	no	714/222-6000	800/788-4267	not tested
DGR Technologies	DGR 256REM	$1799	3.5/256MB	MO [C]	2 years	yes	512/476-9855	800/235-9748	excellent
	DGR 650REM	$2199	5.25/650MB	MO, WORM	1 year	yes	512/476-9855	800/235-9748	excellent
Dynatek	ROS128	$2295 [F]	3.5/128MB	MO [D]	1 year	yes	416/636-3000	none	acceptable
	ROS600	$3895 [F]	5.25/650MB	MO	1 year	yes	416/636-3000	none	acceptable
ETC Peripherals	ETC DataDrive 128R	$1599	3.5/128MB	MO [C,D]	1 year	yes	813/884-2863	800/876-4382	very good
Focus Enhancements	Focus 128MB Optical	$949 [G]	3.5/128MB	MO	3 years	yes	617/938-8088	800/538-8866	acceptable
	Focus 650MB Optical	$2499 [G]	5.25/652MB	MO	3 years	yes	617/938-8088	800/538-8866	acceptable
Fujitsu Computer	DynaMO 128	$1295 [E]	3.5/128MB	MO [C,D]	1 year	yes	408/432-6333	800/626-4686	acceptable
FWB	hammerDisk 1300FMF	$4799	5.25/1.3GB, 1.0GB, 650MB, 600MB	MO	1 year	no	415/474-8055	none	very good
	hammerDisk 1000/4	$4559	5.25/1GB, 650MB, 600MB	MO	1 year	no	415/474-8055	none	very good
	hammerDisk 600S	$3359	5.25/650MB	MO	1 year	no	415/474-8055	none	very good
	hammerDisk 130	$1699	3.5/128MB	MO [C,D]	1 year	yes	415/474-8055	none	very good
GCC	Ultradrive 120MO	$1599	3.5/128MB	MO [C,D]	2 years	yes	617/275-5800	800/422-7777	excellent
La Cie	Cirrus Optical	$949 [F]	3.5/128MB	MO [C]	1 year	yes	503/520-9000	800/999-0143	excellent
Liberty Systems	50 Series MO	$1287	3.5/128MB	MO [C,D]	1 year	no	408/983-1127	none	poor
	70 Series MO	$1239	3.5/128MB	MO [C,D]	1 year	no	408/983-1127	none	poor
	115 Series 256MO	$1854	3.5/256MB	MO	1 year	yes	408/983-1127	none	poor
	115 Series 650MO	$2265	5.25/650MB	MO, WORM	1 year	yes	408/983-1127	none	poor
	225 Series MO	$4195	5.25/1.3GB, 1GB, 650MB	MO	1 year	no	408/983-1127	none	poor
Loviél Computer Corporation	Loviél 128SR	$999 [H]	3.5/128MB	MO [C,D]	1 year	yes	612/828-6880	none	acceptable
MacDirect	DynaMO 128	$998	3.5/128MB	MO [C,D]	1 year	no	612/832-5706	800/759-2133	excellent
	Series V	$988	3.5/128MB	MO	1 year	no	612/832-5706	800/759-2133	excellent
	Series X	$1298	3.5/128MB	MO	1 year	no	612/832-5706	800/759-2133	excellent
MacProducts USA	Magic 128	$949	3.5/128MB	MO [C,D]	1 year	yes	512/476-5295	800/622-3475	very good
Mass Microsystems	DataPak MO 128	$1379 [I]	3.5/128MB	MO [C,D]	1 year	yes	408/522-1200	800/522-7979	acceptable
	DataPak MO 650	$3999 [I]	5.25/650MB	MO [C,D]	1 year	no	408/522-1200	800/522-7979	acceptable
Maximum Storage	Cachet System 5	$925	3.5/128MB	MO	3 months	yes	719/531-6888	none	unacceptable
MicroNet Technology	MO-128	$1795 [F]	3.5/128MB	MO	1 year	no	714/453-6100	none	not tested
	SS-MO-128	$1795 [F]	3.5/128MB	MO	1 year	no	714/453-6100	none	not tested
	SB-SMO-650	$3295 [F]	5.25/650MB	MO	1 year	no	714/453-6100	none	not tested
	SB-TMO-1000	$4095 [F]	5.25/1GB	MO	1 year	no	714/453-6100	none	not tested
	SB-TMO-1300	$4495 [F]	5.25/1.3GB, 1GB, 650MB	MO, WORM	1 year	no	714/453-6100	none	not tested
Microtech International	Genesis 120E	$1343	3.5/128MB	MO [C]	2 years	yes	203/468-6223	800/626-4276	unacceptable
	Genesis 650	$2199	5.25/650MB	MO	2 years	yes	203/468-6223	800/626-4276	unacceptable

CONTINUES

MO = magneto-optical; P = phase change; WORM = write-once, read-many. Technical-support ratings are based on a series of calls made to each company by Macworld staffers (posing as customers) to gauge the accessibility, helpfulness, and accuracy of the company's support technicians. Macworld uses a point system, including bonuses and demerits, to derive the final rating. Ratings are for companies, not individual products, and we call only those companies whose products Macworld Lab tests. [A] Formatted capacities are slightly less than the raw capacity of the media. [B] Price includes Dantz's DiskFit Direct backup software. [C] Drive supports Optical Read-only Memory (O-ROM). [D] Drive supports Partial Read-only Memory (P-ROM). [E] Price includes Macromedia Action & Clipart for Mac software. [F] Retrospect Remote backup software available at additional cost. [G] Price includes Virex, Citadel, and Complete Undelete utilities. [H] SmartSource power base unit, required for operation, costs an additional $119. [I] Price includes Logical Solutions 7th Heaven Finder utility.

operandi in this speed game is to use read and write caches. Serving as data buffers to and from the disk, these small blocks of RAM usually improve the efficiency of data transfers. High-end drives are equipped with large caches of a megabyte or more. However, caches can slow data-transfer rates if they are optimized for the wrong data-packet sizes. Cache efficiency depends greatly on the vendor's implementation as well as on the application you are using.

A Smattering of Small Drives

Regardless of size, most of the drives we tested are good values. Most companies offer a one-year warranty, good or acceptable technical support, and good software. There are some clear bargains among the bunch, as well as some units you should avoid.

Performance among 3½-inch drives was remarkably flat. An efficient read cache gave FWB's hammerDisk 130, based on the Matsushita LF-3000 mechanism, the edge in our speed trials. Ocean Microsystems, Liberty Systems, DGR Technologies, each with the 256MB MOST RMD-5200-S mechanism, were next in line in terms of speed. With the exception of the DGR unit, these drives did well, in part because they do not verify data after writes (see "How Drives Ensure Data Integrity").

Although, in general, the performance of the 256MB drives was slightly faster than that of the 128MB units, the 128MB drives are a good deal, mostly because they're about $750 less than the 256MB drives.

There were a lot of bargains this year in 3½-inch drives. Seven drives were in contention for Editors' Choice, all priced at less than $1000, including Third Wave Computing's and MacDirect's DynaMO bundles, the Sony-based Optima Technology DisKovery 128MO drive, and La Cie's 128MB Cirrus Optical.

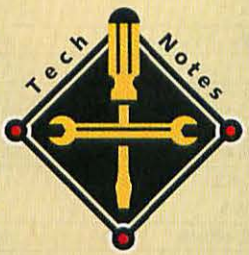
The picks of this litter are the APS Technologies 128 MO at $899 and the ClubMac Epson drive at $959. Both use Epson mechanisms, provide good tech support, have good manuals, and exhibit high performance.

Drives to avoid are few. ETC Peripherals, for all its good intentions, has produced confusing software for its $1599 DataDrive 128R. The interface is a set of unlabeled buttons with such custom icons as a happy Mac for initialization and a wheel for driver

BEHIND OUR TESTS

MW LAB Macworld Lab compared the relative performance of 44 rewritable optical drives—from 3½-inch drives with 128MB of space to 5¼-inch drives that can hold 1.3GB of data. We took these drives through their paces, reading and writing large, 1.3MB PageMaker files, as well as sorting a 4th Dimension database of 4730 records. Our final test targeted high-capacity transfers with large, simultaneous reads and writes from 10MB uncompressed Photoshop 2.0 files. (Photoshop 2.5 format defaults to compression, testing the processor as much as the storage subsystem.) Each drive was formatted with the software provided and was tested in its default configuration.—**Macworld Lab testing supervised by Tim Warner**

ARE BIGGER DRIVES BETTER?



The new 1.3GB drives, besides offering greater capacity, are faster as a class. They use higher rotational rates, split-head optics, and smarter controllers with large caches to achieve their advantage. But bigger isn't necessarily better, as we discovered while observing the relative speeds of beta MaxOptix T3-1300 drives: they were actually slower than the drives based on the 1GB MaxOptix Tahiti IIm mechanism released last year.

This anomaly is the result of a quirk in the ECMA (European Computer Manufacturer's Association) standard for 1.3GB cartridges and how they write data to disk.

Both Tahiti drives implement a format, called ZCAV (Zoned Constant Angular Velocity), that packs data more efficiently into bands that have variable transfer rates. The band at the inner edge of a disk has 1600 sectors, and each successive band adds more sectors; the outermost band has the most sectors. ZCAV takes advantage of higher linear velocities at the outer edge of a disk by reading the higher number of sectors in the same time it takes to read the sectors at the inner edge.

Like hard drives, optical drives usually start writing data at the outer edge of the disk surface, where transfer rates are highest. With the 1.3GB cartridges, the T3-1300 drive starts writing at the *inner* edge—the slowest part of the disk. When using a 1GB cartridge that conforms to MaxOptix's earlier implementation, the T3-1300 drive does start writing at the outer edge. In this configuration, the beta T3-1300 drives are 21 percent faster than their Tahiti IIm cousins.

But starting at the outer edge doesn't always guarantee speed. For instance, the 650MB ISO cartridges also start with the outer edge and move inward, and they aren't as fast as the ECMA 1.3GB cartridges. Without the additional sectors provided by ZCAV on the outer bands, the drive still reads only the same number of sectors per revolution as it does on the inner tracks.

Writing to the inner band first is inherent in the ECMA standard, so other 1.3GB drive mechanisms will have the same problem. Alphatronix will include an option (not the default) to format the disk so that writes begin in the outermost band and work their way in, band by band. A simpler way to get around the 1.3GB format limitations is to partition your cartridge. The first partitions you create will be the slowest. A 100MB-to-200MB partition at the outer edge will guarantee the best performance.

Shedding Light on Optical Drives (continued)

Company	Product	List Price	Form Factor/ Media Capacities Supported[J]	Technology	Warranty	Tested	Phone	Toll-Free Phone	Tech Support
Mirror	Mirror 128MB Optical Drive	$1149	3.5/128MB	MO[K]	1 year	yes	612/633-4450	800/654-5294	acceptable
	Envisio SmartStack 128MB Optical	$999[L]	3.5/128MB	MO[K]	1 year	yes	612/633-4450	800/654-5294	acceptable
Ocean Microsystems	Vista V256 (ext)	$1748	3.5/256MB, 128MB	MO[K]	1 year	yes	714/898-1340	none	good
	Vista V256 (int)	$1685	3.5/256MB, 128MB	MO[K]	1 year	no	714/898-1340	none	good
	Vista V128 (ext)	$999	3.5/128MB	MO	1 year	no	714/898-1340	none	good
	Vista V128 (int)	$999	3.5/128MB	MO	1 year	no	714/898-1340	none	good
Olympus Image System	MOS 300E Magneto optical Disk Drive	$1250	3.5/128MB	MO[K,M]	2 years	no	714/453-4469	800/347-4027	poor
	MOS 300S Magneto optical Disk Drive	$1500	3.5/128MB	MO[K,M]	2 years	yes	714/453-4469	800/347-4027	poor
Optical Access International	RD/128LC	$898	3.5/128MB	MO[K,M]	1 year	no	617/937-3910	800/433-5133	acceptable
	RD/128HP	$999	3.5/128MB	MO[K,M]	1 year	no	617/937-3910	800/433-5133	acceptable
	RD/256HC	$1395	3.5/256MB	MO[K,M]	1 year	no	617/937-3910	800/433-5133	acceptable
	RD/Aria	$1199	3.5/128MB	MO[K,M]	1 year	yes	617/937-3910	800/433-5133	acceptable
	RD/Express	$1898	5.25/650MB	MO	1 year	yes	617/937-3910	800/433-5133	acceptable
	MF/Gigabyte	$2995	5.25/1GB	MO, WORM	1 year	no	617/937-3910	800/433-5133	acceptable
	RD/Express III		5.25/1.3GB, 1GB, 650MB, 600MB	MO	1 year	no	617/937-3910	800/433-5133	acceptable
Optima Technology	MiniPak 128MO	$995	3.5/128MB	MO[K]	1 year	no	714/476-0515	none	very good
	DisKovery 128MO	$995	3.5/128MB	MO[K]	1 year	yes	714/476-0515	none	very good
	Concorde 600MO	$2195	5.25/650MB	MO	1 year	yes	714/476-0515	none	very good
Panasonic	LF-3000	$2195	3.5/128MB	MO, WORM	1 year	no	201/348-7000	800/742-8086	unacceptable
	LF-5010	$3295	5.25/940MB	P, WORM	1 year	no	201/348-7000	800/742-8086	unacceptable
	LF-7010	$3995	5.25/1GB	P, WORM	1 year	no	201/348-7000	800/742-8086	unacceptable
	LF-9000	$3995	5.25/650MB	MO, WORM	1 year	no	201/348-7000	800/742-8086	unacceptable
Pinnacle Micro	PMO-650	$3199	5.25/650MB	MO	1 year	yes	714/727-3300	800/553-7070	excellent
	Tahoe-130	$999	3.5/128MB	MO	1 year	no	714/727-3300	800/553-7070	excellent
	Sierra 1.3GB	$2995	5.25/1.3GB, 650MB	MO	1 year	no	714/727-3300	800/553-7070	excellent
Plasmon Data Systems	RF-3010	$2195	3.5/128MB	MO	1 year	yes	408/956-9400	800/445-9400	unacceptable
	RF-3010i	$1995	3.5/128MB	MO	1 year	no	408/956-9400	800/445-9400	unacceptable
	RF-7010	$3995	5.25/1GB, 650MB	P, WORM	1 year	yes	408/956-9400	800/445-9400	unacceptable
PLI	Infinity MaxOptical IIm	$4113	5.25/1GB, 650MB	MO, WORM	1 year	yes	510/657-2211	800/288-8754	acceptable
	Infinity MaxOptical 1.3	$4725	5.25/1.3GB, 1GB, 650MB	MO, WORM	1 year	no	510/657-2211	800/288-8754	acceptable
	Infinity Optical 5.25"	$3378	5.25/650MB	MO	1 year	no	510/657-2211	800/288-8754	acceptable
	Infinity Optical 3.5"	$1610	3.5/128MB	MO[K,M]	1 year	yes	510/657-2211	800/288-8754	acceptable
	Infinity Optical 3.5" LF	$1426	3.5/128MB	MO[K,M]	1 year	no	510/657-2211	800/288-8754	acceptable
Procom Technology	MEOD 128	$1895[N]	3.5/128MB	MO	1 year	yes	714/852-1000	800/800-8600	unacceptable
	MEOD 650	$3995[N]	5.25/650MB, 600MB	MO	1 year	yes	714/852-1000	800/800-8600	unacceptable
	MEOD 1300	$4995[N]	5.25/1.3GB, 1GB, 650MB, 600MB	MO	1 year	no	714/852-1000	800/800-8600	unacceptable
	MEOD 650-1	$3495[N]	5.25/650MB, 600MB	MO	1 year	no	714/852-1000	800/800-8600	unacceptable
Relax Technology	Ricoh 5031E	$2399	5.25/650MB	MO	1 year	yes	510/471-6112	none	good
	Ricoh 3010E	$999	3.5/128MB	MO[K,M]	1 year	yes	510/471-6112	none	good
	Ricoh 3013E	$799	3.5/128MB	MO	1 year	no	510/471-6112	none	good
Ricoh Corporation, File Products Division	Transporter Mac/e	$1995[O]	3.5/128MB	MO[K]	1 year	yes	201/882-2000	800/637-4264	unacceptable
	Transporter Mac/i	$1795[O]	3.5/128MB	MO[K]	1 year	no	201/882-2000	800/637-4264	unacceptable
	Hyperspace Mac/e	$3995[O]	5.25/650MB	MO	1 year	yes	201/882-2000	800/637-4264	unacceptable
Storage Dimensions	MacinStor 650EO	$3670[P]	5.25/650MB	MO	1 year	no	408/954-0710	none	acceptable
	MacinStor 1000EO	$4610[P]	5.25/1GB, 650MB	MO	1 year	yes	408/954-0710	none	acceptable
Third Wave Computing	DynaMO 128	$999	3.5/128MB	MO[K,M]	1 year	no	512/477-9845	none	acceptable

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installation. Although these icons are cute, they're unintuitive. Fortunately, the help icon is obvious—a question mark.

Others to steer clear of include Procom Technology's MEOD 128, which at $1895 gives you compulsory write verification that you can't disable, and unacceptable technical support. Ricoh Corporation's Transporter Mac/e drive has a $1995 price tag that is $500 above the average street price of the other 3½-inch drives we tested. Since the only redeeming value of this drive is the manual that comes with the software, this is not a very good value. Finally, avoid the Dynatek ROS128—$2295 is too much money for a drive that has no manuals, so-so software, mediocre technical support, and an ugly case.

The Big and Heavy Hitters

The PLI Infinity MaxOptical IIm, with its Tahiti IIm mechanism, unseated the Pinnacle PMO-650. The MaxOptical IIm's performance outstripped our expectations while offering a reasonable price of $4113.

However, there still is a reason to recommend the PMO-650. It remains the fastest 650MB drive with a reasonable price, $3199. But that doesn't mean this unit is without problems. Because Pinnacle uses spin rates that are too high for most media, PMO cartridges are incompatible with other drives. A far greater drawback (and one of the only serious problems I had using any formatting software) is that Pinnacle Micro's PMO Formatter 1.3r0 let me remove my start-up partition. This would be the equivalent of the Macintosh Operating System allowing you to format your start-up disk—which it does not. And neither should Pinnacle Micro's software.

You can find 650MB units for less than $3000, but they're not the good, all-around values that the 128MB 3½-inch drives are. The best of the 650MB drives include ClubMac's Sharp JY-750, with its $1829 list price.

On the downside of 650MB units, Microtech International surprised us by having unacceptable technical support. Liberty also has poor tech support along with absurdly inadequate user manuals. DGR did well in most areas, but its cartridge with Anubis driver software would mount only in Sony mechanisms.

Drives to avoid include the 650MB units from Dynatek, Ricoh, and Procom. Like their siblings in the 3½-inch form factor, these drives as a group had the worst price-to-performance value, and they provided poor overall value.

No Slowing Down for Optical

With competition increasing in every facet of the storage market, optical vendors intend to push the capacities higher while attempting to eliminate performance bottlenecks that keep optical lagging far behind hard drive performance.

A newly proposed standard capacity of 230MB for 3½-inch optical drives, sponsored by big players such as Sony and IBM, may leave MOST's 256MB format out in the cold. The standard guarantees users compatibility between many drives, as well as backward compatibility for existing 128MB media. Products developed according to this new standard are due out in mid-1994. And capacities may continue to grow for this standard—to as much as 1GB on a single cartridge by 1995.

By the time you read this, you might want to consider one of the bevy of 5¼-inch 1.3GB drives that are due out relatively soon. We glimpsed speeds of the future in a test of prerelease 1.3GB drives using MaxOptix T3-1300 mechanisms. (Based on our earlier look, these drives should perform at speeds close to low-end hard drives.) The 1.3GB mechanisms aren't without their quirks, though the oddities have more to do with how cartridges at these capacities are formatted than with the mechanisms themselves (see "Are Bigger Drives Better?"). Expect prices for these units to be at the high end, ranging from $3800 to $4300.

Other vendors were also readying 1.3GB mechanisms at the time of our testing, among them Pinnacle Micro, Sony, Hewlett-Packard, and IBM.

Not content to rest on their laurels, manufacturers plan to push 5¼-inch cartridge capacities to 2.6GB in the next year. According to MaxOptix, single-pass writes are expected by the end of 1995. However, the fabled blue-light lasers that promise to increase capacities fourfold over 650MB are still a good four years away.

Ambitious design and engineering investments in rewritable optical technology will be matched by other storage technologies. However, new products will undoubtedly move current top-of-the-line drives down to affordable levels while their performance approaches that of hard drives. So optical drives may indeed compete with hard drives for a prominent place on your desk. **m**

OPTICAL DRIVES

MW EDITORS' CHOICE

We were encouraged by the slew of low-cost drives available this year. Competition was especially stiff among 3½-inch drives. To make our choices, we weighed price-to-performance, tech-support quality, and other quality issues for products in each category.

3½-inch Drives

Epson OMD 5010 Low price and all-around value characterize this 128MB rewritable optical drive. **Company:** ClubMac. **List price:** $959.

128 MO This drive displayed top performance among the drives available for under $1000. The company also offers good technical support, which is toll-free. **Company:** APS Technologies. **List price:** $899.

5¼-inch Drives

Sharp JY-750 Without question the best bargain among 5¼-inch drives, this drive is the only 650MB we tested that is available for less than $2000. **Company:** ClubMac. **List price:** $1829.

Infinity MaxOptical IIm Outstanding performance at a reasonable price makes this drive the best of all the 1GB drives. **Company:** PLI. **List price** $4113.

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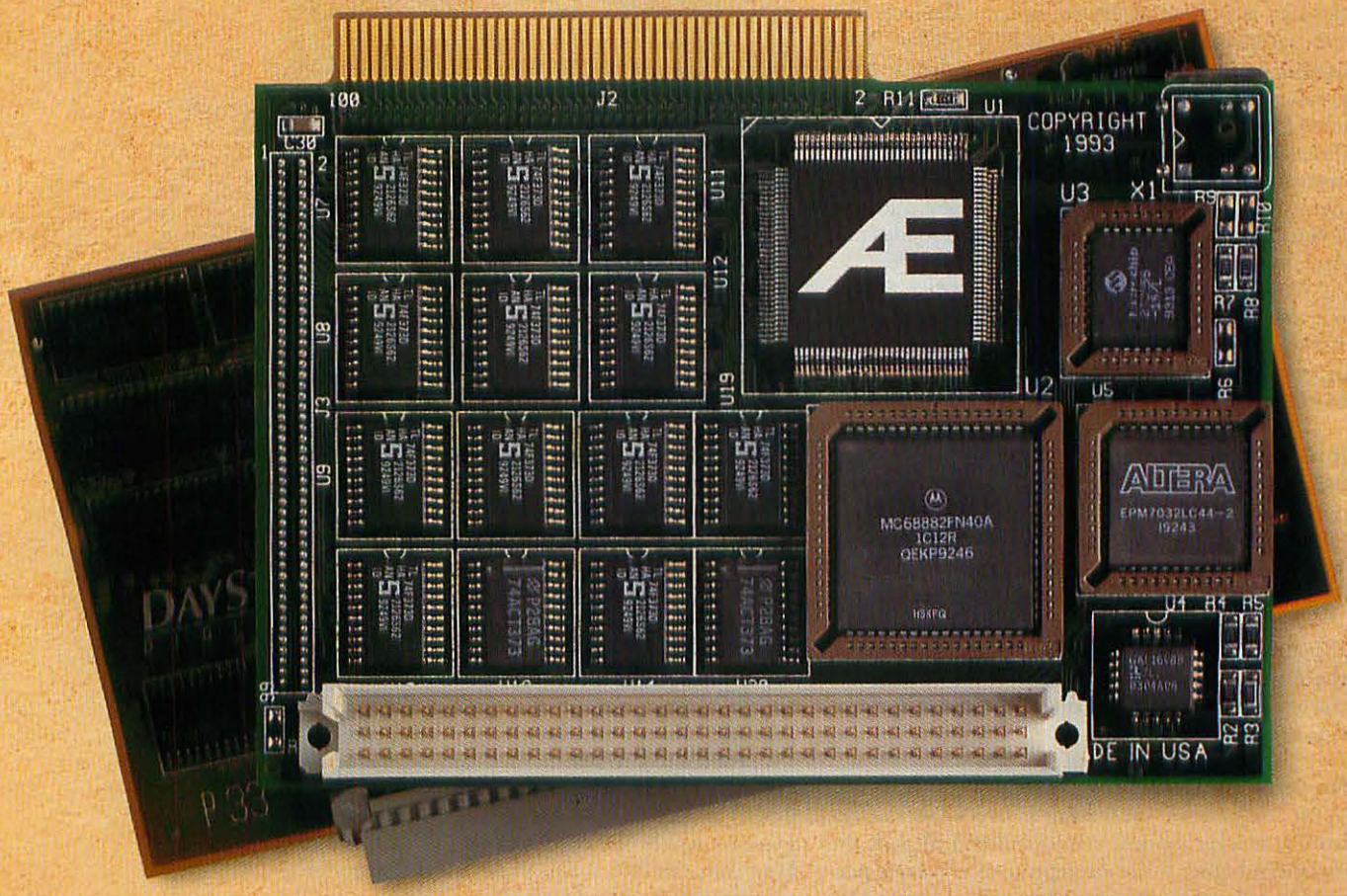

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	40 MHz	AE	6.2	Yes	$349
		DAYSTAR	NA	No	NA
	40 MHz w/Cache	AE	11.5	Yes	$428
		DAYSTAR	11.09	No	$698
68030 LC, LCII Color Classic Peforma 400 Series	33 MHz	AE	2.65	Yes	$449
		DAYSTAR	2.52	No	$498
	40 MHz	AE	3.13	Yes	$449
		DAYSTAR	3.07	No	$698
68040 II, IIx, IIci, IIvi, IIvx, IIsi Performa 600 Series	25 MHz	AE	4.5	NA	$999
		DAYSTAR	4.7	NA	$1,299
	33 MHz	AE	5.0	NA	$1,199
		DAYSTAR	5.0	NA	$1,599
	40 MHz	AE	5.5	NA	$1,499
		DAYSTAR	5.2	NA	$2,399

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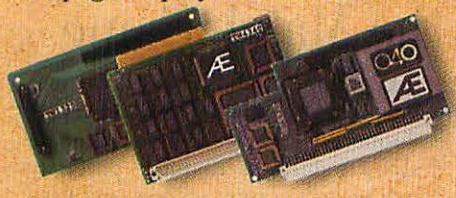

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Circle 167 on reader service card

EDITED BY JAMES A. MARTIN

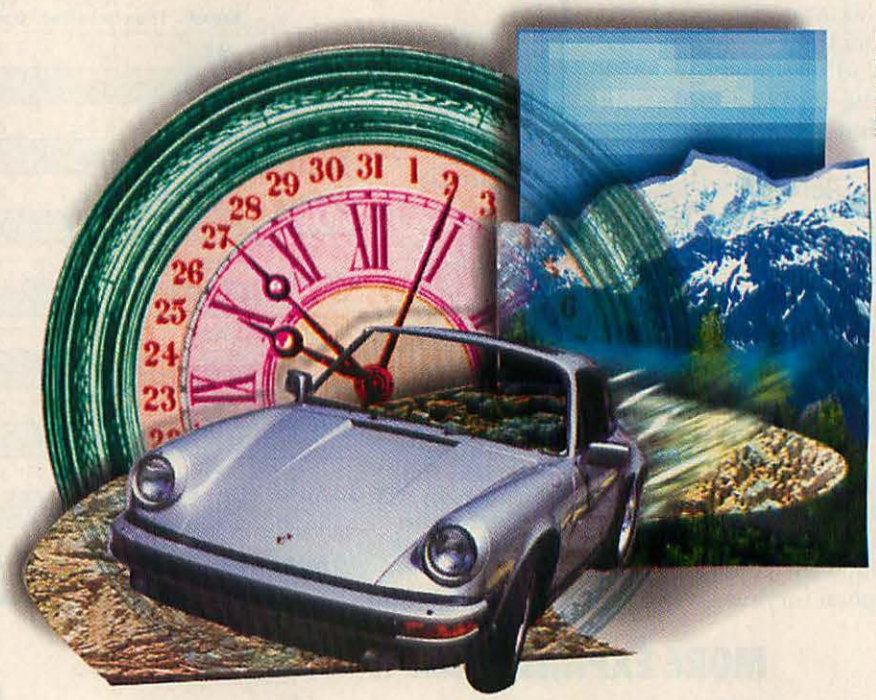
Graphics

THE LATEST IN DESIGN, PUBLISHING, AND PREPRESS

Live Picture: High-Power Imaging

LIVE PICTURE, THE MUCH-DISCUSSED and anticipated graphics application that debuted earlier in the year, is now set to ship by year's end. The first 48-bit color graphics application for the Mac, Live Picture offers mathematical imaging tools and on-the-fly rendering that make opening and manipulating large high-resolution files instantaneous and effortless.

When you open a 150MB file in Live Picture, for example, the program loads a virtual image of the file that you can then scale, rotate, skew, reposition, or perform any other operation on—and you wait only one or two seconds to see the results. And because Live Picture stores all its image data in mathematical equations, it can accommodate an infinite number of resolutions, layers, and levels of undo. In the past, compositing multiple images of varying resolutions has always meant that all the images would be forced into one resolution, but that's not the case with Live Picture, since its images are resolution-independent.



ANDREW FAULKNER

As a result, an artist can combine any number of images in the same file without losing detail, because each image resides on a separate layer and maintains its own resolution and size. And Live Picture's continuous, infinite undo/redo makes for a smooth editing process that's completely reversible—to revise changes you can go as far forward or backward as you like.

Live Picture's special effects include some unusual brushes, which can be as large as 3000 pixels wide. One brush enables you to enlarge the image you're brushing by moving the brush clockwise in a circular motion, or you can reduce the size of the image by moving the brush counterclockwise.

There's also a feature called Intelligent Brush Masking, which makes it possible to quickly and easily create extremely complex masks, such as a tree with many branches and leaves.

Live Picture's FITS (Functional Interpolating Transformation System) technology consists of two different file formats: IVUE and FITS. The IVUE format provides high-speed, unlimited zooming capability on an entire image or any part of it, while the FITS format mathematically defines and stores whatever manipulations are performed on the image.

Live Picture requires a Mac Quadra with 32MB of RAM as a minimum (64MB or more is recommended). Developed by Paris-based FITS Imaging and already available in France, Live Picture will be distributed in North America by HSC Software for $3495. HSC Software, 310/392-8441.—CATHY ABES

Pantone Joins the Match Game

PANTONE HAS DEVELOPED A COLOR-matching technology—currently code-named Clarity—that will enable desktop publishers to more precisely match on-screen spot, process, and Pantone colors to desktop printers and imagesetters.

Expected to become available in early 1994, Clarity works in much the same way as Electronics for Imaging's EfiColor color-matching system. Both provide color-device profiles as a basis for matching screen colors with print colors. Unlike EfiColor, however, Pantone's color-matching technology is a ColorSync-

compatible system extension, as well as an open environment. Pantone is making profiles available to printer manufacturers and software developers (including EFI) at no cost in the hope of gaining widespread support for Clarity.

To use Clarity, desktop publishers will need a Clarity color profile of their output device; according to a Pantone spokesperson, printer manufacturers will most likely offer the profiles at no cost via online bulletin boards. In addition, software applications must be updated to support Clarity.

A Pantone spokesperson said that in most cases, publishers will want to use one color-management system or the other, but added they could use both in the same application. For instance, in QuarkXPress—which supports the Pantone Color Matching System and ships with an EfiColor Xtension—publishers could use EfiColor to match process colors and Clarity for matching Pantone colors.

Pantone expects to have up to 35 printer profiles available by January, along with a handful of scanner profiles. Pantone, 201/935-5500.—J.A.M.

Fargo's Thermal-Wax Printer Has Split Personality

TOM GIBSON

Fargo's Primera Color Printer

AT LEAST YOU CAN'T SAY YOU'VE seen this one before: a thermal-wax printer that, via a switch of ribbons and a click of the mouse, becomes a dye-sublimation printer—for under $1500.

Fargo Electronics recently announced the Photo-Realistic Upgrade Kit ($249.95), which transforms Fargo's Primera Color Printer ($995), a 203-dpi thermal-wax QuickDraw device, into a dye-sublimation printer. Along with the printer and upgrade kit, you need Fargo's Macintosh interface kit ($199.95)—which gives you two printing technologies for $1444.90.

Considering that most dye-sub printers cost anywhere from $7000 to $25,000, Fargo's claims are bound to raise eyebrows. In fact, a Fargo spokesperson said the Primera, unlike traditional dye-sublimation printers, uses a combination of dithering and gray-scale shades to achieve print quality that's close to photo-realistic. In addition, the Primera, in dye-sub mode, prints only CMY pigments—not full CMYK.

But Fargo isn't going after the high-quality prepress market. "We just want to bring good-quality color to the masses," said Rob Francis, Fargo's engineering sales manager. Francis said the printer is designed for photographers, low-cost proofing, and limited final output.

The Primera works on Macs and Windows-based PCs. Print time varies from 11 to 15 minutes per page in dye-sub mode and 4 to 6 minutes for thermal-wax prints. Fargo Electronics, 612/941-9470. —J.A.M.

PixelPaint Pro on the Comeback Trail

PIXELPAINT PRO3—THE FIRST UPgrade in over two years to Pixel Resource's once-moribund painting and image-editing program—boasts multiple live, floating selections and scripting capabilities, among other features.

PixelPaint Pro3 lets you edit and manipulate multiple selections contained within the same document. Each selection has its own layer and remains live until pasted into the image background. This helps you to continually, and quickly, experiment with objects. The number of layers is limited only by memory.

Fractal Design Painter 2.0 also offers multiple floating selections via its add-on Painter/X2 module (see *Graphics* news, September 1993). However, a spokesperson for Pixel Resources noted that the ability to work with multiple selections is integrated into PixelPaint Pro3, which makes working with multiple selections easier than in Painter.

PixelPaint Pro3 enables you to record any series of commands and executions as a script. Scripts aren't editable, however. The program is compatible with AppleScripts generated in other applications, but you can't create AppleScripts from within PixelPaint Pro3.

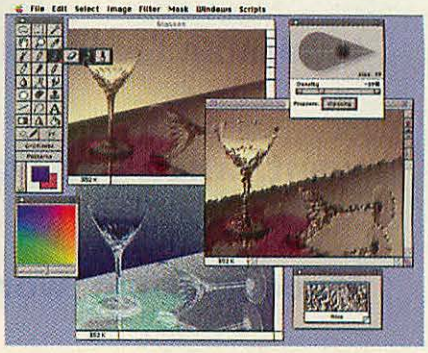
PixelPaint Pro3 is scheduled to ship in October for $379; the upgrade is $89 to $149, depending on the version you have. Pixel Resources, 404/449-4947; 800/851-1427.—J.A.M.

IN BRIEF

■ **Updating DeBabelizer** Version 1.5 of DeBabelizer ($299), a graphics-file–translation utility from Equilibrium Technologies, offers improved color reduction and remapping, support for Apple events and Kodak Photo CD, and automated batch-compositing. Upgrades are $74.95. 415/332-4343, 800/524-8651.

■ **Color Central Update** Compumation's upgrade to its OPI/DCS image print server, Color Central 2.1 ($495), now supports EPS-JPEG, PC-TIFF, Scitex CT, Photo CD, and native Photoshop formats; automatic image placement into Aldus Fetch and other image databases; the Apple Workgroup Server 95; color calibration; and scripting. Color Central sells for $3995; the upgrade is $495. 814/238-2120.

■ **A Look at Glimpse** Pixar has released Glimpse, a utility that allows you to edit surface textures by changing parameters such as color, transparency, glow, shininess, highlight, and reflection. ShowPlace users can also create new textures from PICT and TIFF images. Glimpse is being bundled with ShowPlace 2.0 ($695), a picture-composition program, and is also available separately for $75. 415/236-4000.



PixelPaint Pro3 offers multiple live selections.

You don't talk to your mother the same

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WORDPERFECT IS A REGISTERED TRADEMARK OF WORDPERFECT CORPORATION WITHIN THE UNITED STA

Expert Graphics

GRAPHICS PROFESSIONALS SHARE THEIR SECRETS

by Cathy Abes

Artist: Darrel Anderson, together with his partner Rick Berry, has created 3-D illustrations and animations on the Mac for the past six years. The image shown here—and many others produced by Anderson and Berry through their studio, Braid—will appear in a book, also called *Braid*, to be published in 1994.

How It Was Done: Anderson designed this 3-D illustration for a promotional piece to showcase several Pixar shaders he wrote for use with RenderMan. Shaders similar to the ones shown here are available from The Valis Group (510/236-4124; fax 510/236-0388).

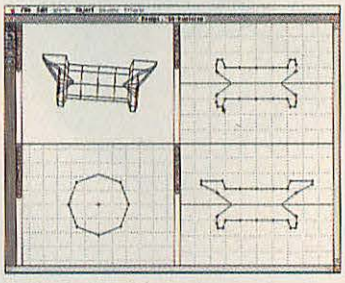
In Swivel 3D, Anderson began by building and posing the basic models, which he output in RenderMan's RIB format. Then, using a conversion utility he had previously created, he altered the RIB files to convert them from Swivel's polygonal structure into parametric objects. This produced smoother, better-looking models that would render about two to three times faster in RenderMan.

Then Anderson imported the models one by one into Pixar ShowPlace, where he positioned them, added other objects such as the floor and the square-shaped stone slabs. Next he added lighting: two distant light sources; two spotlights, one emanating from inside the lamplike screen of the console and the other from directly behind it; plus some ambient light.

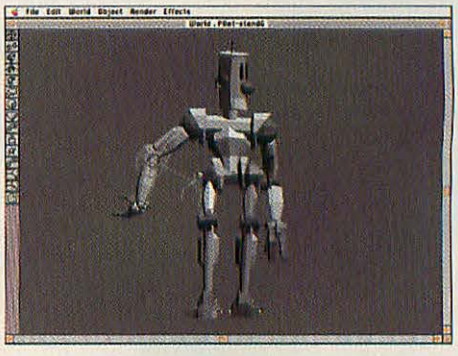
Also in ShowPlace, Anderson positioned the camera and applied various shaders to the objects. Then he saved the entire scene as a RIB file and rendered it with RenderMan using the rendering application RenderApp.

After importing the final rendered image into Adobe Photoshop, where he adjusted color balance, brightness, and contrast, Anderson placed a previously rendered 3-D image behind the robots as a futuristic backdrop.

The models took about 20 to 30 hours to create; the setup of the scene for rendering took another 15 hours; and the final rendering took about 12 to 14 hours. The final image size was 6MB. **m**



1 Anderson built the robots in Swivel 3D Professional by creating and fitting together numerous simple shapes, such as the cylindrical upper torso shown here. Each robot consists of about 60 such shapes.



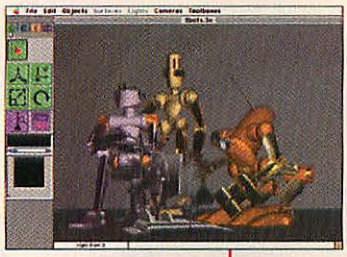
2 After building the robots, he moved them into the appropriate poses. To change this robot's right arm from its original hanging position, he rotated the elbow until the hand rested on the hip.

3 The standing robot in its final pose, shown in Swivel's somewhat crude polygonal form, is ready to be converted to the much smoother and more efficient parametric form via Anderson's proprietary conversion utility, SwivelPatch.

THE TOOLS

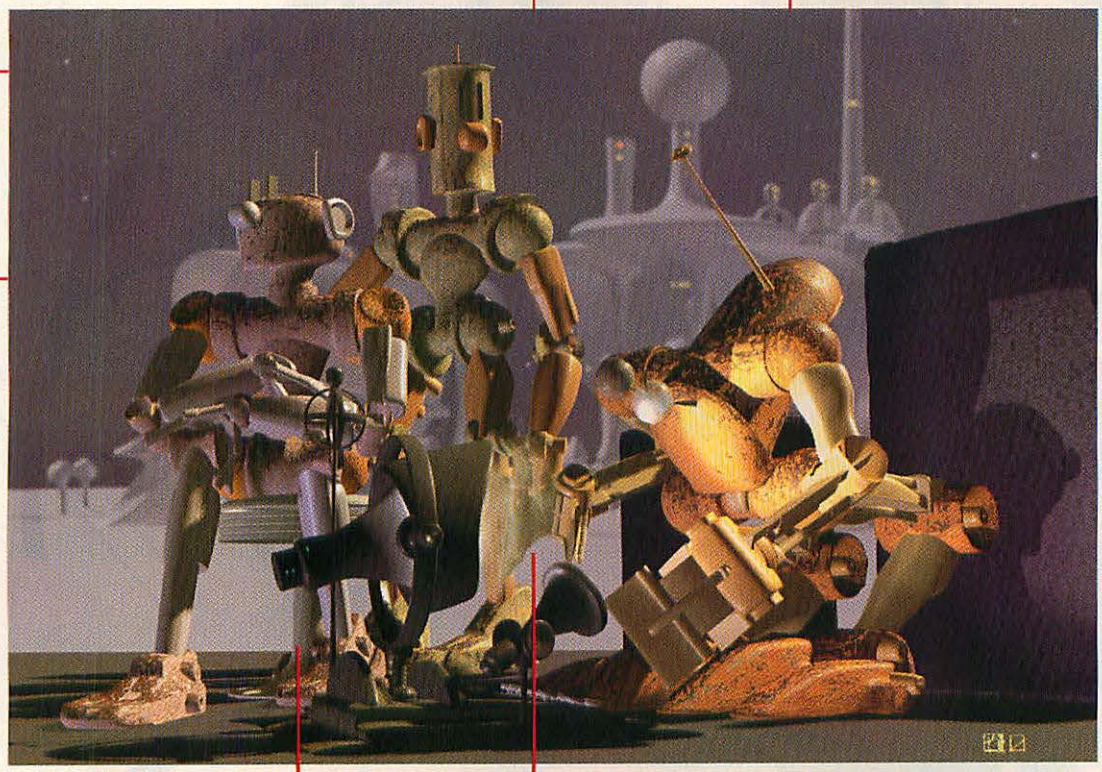
Hardware: Mac II with 8MB of RAM; 80MB Quantum internal hard drive; RasterOps 264 24-bit color graphics card; 13-inch AppleColor monitor.

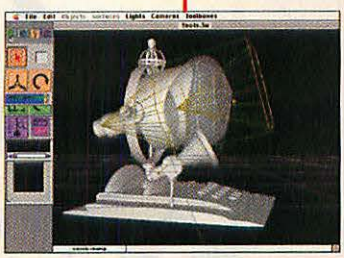
Software: Swivel 3D Professional 2.0; Pixar ShowPlace 1.0; MacRenderMan/RenderApp 1.0; SwivelPatch (proprietary parametric-conversion utility); Adobe Photoshop 2.5.



6 After positioning all the objects, lights, and camera angle, but before adding the shaders, Anderson did a test rendering using ShowPlace's Quick 'n' Dirty image-quality setting.

7 To composite the futuristic backdrop with the robot scene, Anderson first opened both images in Photoshop and copied the backdrop, then activated the robot image and loaded the selection, which created a selection based on the alpha channel automatically generated by MacRenderMan. He then used that selection to paste the backdrop behind the robots. Using the Composite Controls command, he set the opacity to 50 percent to blend the backdrop with the original background.





5 After he had imported all the objects into ShowPlace, Anderson set up the lighting for the scene. Using the Light Sources toolbox, he placed one spotlight inside the console screen and placed another one behind the console.

4 Using sample shapes, Anderson did test renderings to determine the best parameters for the shaders (here, Glowfog), that he would later apply to the objects in ShowPlace.

MICK WIGGINS

BY STEVE ROTH

PAGEMAKER VS XPRESS

THE REMATCH

MACWORLD WEIGHS THE STRENGTHS AND WEAKNESSES OF THE TWO PUBLISHING GIANTS

The two heavyweights of desktop publishing, Aldus PageMaker and QuarkXPress, have just gone through major upgrades—PageMaker to version 5.0, QuarkXPress to version 3.2—with each program adding dozens of features. PageMaker has beefed-up its tools for color work and improved the Control palette, while QuarkXPress has added EfiColor color management and Apple events scripting.

Rather than concentrating on a laundry list of new features, however, in this article I point out the feature-by-feature differences between the two programs in their latest incarnations.

If a particular feature works in about the same way in both programs, I don't mention it. If one program has a feature that the other doesn't, that feature is listed in the comparison table (see "What's the Difference?") but not discussed in the article. What you will find here is an evaluative guide to the sometimes subtle, sometimes obvious ways the two programs differ, to help you decide which program best suits the particular kind of publishing work you do. (See *Reviews*, *Macworld*, November 1993, for additional reviews of both programs.)

The Big Differences

The programs' approaches in three main areas—pages, page elements, and add-on modules (Aldus Additions, Quark XTensions)—account for many of their feature differences.

Pages and pasteboard In QuarkXPress you can see as many pages at once as will fit in the window, and each page or spread has its own pasteboard. In PageMaker, you can only view one spread at a time, and the pasteboard is common to all pages. Being able to see multiple spreads has big advantages, and given that each program has a Library palette for storing items common to all pages, QuarkXPress's pasteboard approach is more useful than PageMaker's.

Page elements QuarkXPress pages consist of text and graphics boxes (plus lines)—you draw a box, then fill it with

What's the Difference?

This table details the differences between PageMaker 5.0 and QuarkXPress 3.2. In areas where the programs function in substantially the same way, features are not listed.

The ratings represent the author's opinion of how well each feature and group of features is implemented, giving greater weight to the more important features and feature sets within each group. For discussion of each group, see the appropriate head in the body of the article. For more information on PageMaker, call Aldus Corporation at 206/628-2320; for further details on QuarkXPress, call Quark at 303/344-3491 or 800/788-7835.

	PM	QXP
INTERFACE AND DOCUMENT CONSTRUCTION		
Files, windows, opening, and saving		
Number of open documents	NA [A]	25
Maximum file size (in pages)	999	2000
Maximum page size (in inches)	42 × 42	48 × 48
Pasteboard		
Autosave and autobackup		
Templates included	16	8
Preview templates when opening	[B]	
Source-file management		
Link and update text files		
Link and update graphics files		
Preview graphics when importing		
Retain cropping when replacing/updating graphics		
Save as EPS		
Use Photoshop Acquire modules		
Palettes, tools, and controls		
Interruptible screen redraw		
Gray out graphics while scrolling		
Undo command		
Control/Measurements palette		
Libraries		
Adjust defaults/preferences		
Apply button in dialog boxes		
Keyboard shortcuts		
Pages, master pages, and spreads		
View multiple spreads		
Drag pages between documents		
View thumbnails		
Rearrange page order		
Spreads greater than two pages		
Number of master spreads per document	1	127
Change master items on document pages		
Automatic page insertion		
Live running heads		
Zooming and moving		
Magnification range	1–800	10–400
Custom zoom percentages/magnifying glass tool		
Moving between pages		
Gray out pictures while scrolling		
Live scroll bars		
Measurements, rulers, and guides		

Key

- Yes; or feature is well implemented.
- Very usable but missing some feature(s), or feature(s) not well implemented.
- Still usable but missing important feature(s), or feature(s) badly implemented.
- Barely usable, with glaring absence of features or terrible implementation.
- No; or feature is missing.

text or a graphic. PageMaker page elements are independent—a chunk of text or a graphic on a page is its own entity, with no box containing it.

PageMaker's approach makes for a simpler, more intuitive interface, especially since QuarkXPress insists on making any box you're working on opaque, obscuring any other boxes that overlap it. But QuarkXPress makes it easier to put a box around an element or drop a tint behind it, among other page-design advantages.

Add-on modules Though similar on the surface, Aldus Additions are ultimately less powerful than Quark XTensions. Some of the XTensions available fundamentally change QuarkXPress's feature set. SXetch Pad, for example, adds full drawing tools—including Bézier curves and the ability to convert type to paths. But Additions are often more like sophisticated macros with dialog boxes—the Bullets and Numbering Addition, for instance, simply sets indents and types characters and has no real intelligence of its own.

XTension technology means that—for a sometimes hefty price—you can greatly enhance the powers of QuarkXPress with add-ons from dozens of vendors. At present, there are only a handful of third-party Additions, most of which are simple utilities or hooks into other programs.

Interface and Document Construction

Files, windows, opening, and saving PageMaker and QuarkXPress offer autosave methods superior to any others I've seen. Both keep track of changes while you're working, so in the event of a crash you can revert to the last "minisave." In QuarkXPress you have the *option* of recovering unsaved changes after a crash; PageMaker does it without asking. QuarkXPress also offers a handy autobackup feature, which maintains a selectable number of previous saved versions.

PageMaker's templates, which include complete style sheets, are ingenious little scripts that create publications based on dialog box selections (page size, label template, and so forth). QuarkXPress's few in-the-box templates are special purpose and lack style sheets, so they aren't much use.

Source-file management PageMaker's Links dialog boxes give you more information about linked files than QuarkXPress does. When linking graphics files, you can choose whether to store each image in the publication (in QuarkXPress you must paste it in). You can control whether each graphic is automatically updated (a document-wide control in QuarkXPress), and you can unlink graphics (in QuarkXPress you have to delete or move the source file).

QuarkXPress's big advantages are the Show Me button, which jumps to the right page and displays the selected graphic, and its automatic updating of linked graphics files during the print process. QuarkXPress also has several more options for saving files in EPS format than PageMaker has.

Palettes, tools, and controls PageMaker's controls have one huge advantage over QuarkXPress's: you can interrupt redrawing at any time by clicking the mouse or invoking commands. In QuarkXPress you can only stop redrawing by pressing ⌘-period (.).

You can't undo an action in PageMaker if you've clicked anywhere (except on the menu bar) after per-

	PM	QXP
Measurement precision/accuracy		
Use +, -, /, * operators		
Finest ruler increment (in points)	1	3
Custom vertical ruler		
Snap-to ruler increments		
Custom points/inch/ciceros/centimeter		
Long documents		
Group publications into books		
Sections within documents		
Page numbering		
Table-of-contents generation		
Indexing		
Scripting		
Run scripts from within program		
Apple-events scripting		
Scripting documentation		
Include run-time version of Frontier		
Interchange with Windows versions		
Font- and character-set mapping		
EPS file handling		
PICT and WMF file handling		

PAGE ELEMENTS

Lines, boxes, ovals, and polygons		
Oval and polygonal graphic boxes		
Arrowhead lines		
Set rounded-corner radius		
Graduated fills		
Custom widths for patterned lines		
Line widths/increments (in points)	.1–800/.1	.001–64/.001
Custom borders		
Imported graphics		
Scale bitmaps to printer resolution		
Bitmapped image control		
Control screen resolution/bit depth of bitmaps		
Compress TIFFs		
Moving, scaling, rotation, skewing		
Drag items between documents		
Drag items between pages		
Nudge items		
Adjust snap-to distance		
Bring forward/send backward		
Percentage scaling increments	.1	.001
Scale ovals and rectangles proportionally		
Rotation/skewing increments (in degrees)	.01	.001
Rotate in-line graphics		
Grouping, locking, alignment, and distribution		
Group items		
Lock items		
Align and distribute items		
In-line/anchored elements and paragraph rules		
In-line/anchored text boxes		
Paragraph rules		
In-line elements and text positioning		

TEXT AND TYPE

Word processing		
Story editor		
Find, change, check spelling in layout view		
Display invisible characters	c	
Drag-and-drop text editing		
Smart quotes while typing		
Paragraph numbering and bullets		
Check spelling		
Editing dictionaries		
Same dictionary for spelling and hyphenation		

forming the action. And you can't undo any text modifications but deletions. QuarkXPress can't undo deletion of pages or of multiple items (it warns you in each case).

PageMaker's Control palette has leapfrogged QuarkXPress's Measurements palette, offering more flexible control, in addition to both character and paragraph text modes.

In PageMaker's Library palette you can search by keyword, description, and author name (and import libraries from Aldus Fetch catalogs). QuarkXPress doesn't provide the searching capability (you can only select by the items' names), but you can have multiple libraries open.

Unlike QuarkXPress's application-wide Apply and Auto-Apply features, PageMaker has an Apply button only in the Tabs dialog box.

Pages, master pages, and spreads In QuarkXPress you can view and scroll through multiple spreads (and spreads can include more than two pages), drag pages between documents, view thumbnails, and easily rearrange page order (possible—though very slow—with PageMaker's Sort Pages Addition). The QuarkXPress approach means you can drag items between pages—a clumsy process in PageMaker.

QuarkXPress offers 127 master spreads per document, compared with PageMaker's 1. You can edit master items on document pages in QuarkXPress and control whether they're replaced when you apply a different master page to a document page, or update the master page.

QuarkXPress can automatically add pages for autoflowed text at the end of the current story, section, or document. PageMaker always puts them at the end of the document.

PageMaker's ingenious Running headers/footers Addition places live running heads (as in a dictionary or phone book) for you, finding the first or last instance of a given style on each page and using some portion of the text in that paragraph as the running head. You define the portion of text using a coding scheme.

Zooming and moving Both programs offer custom zoom percentages in addition to canned views (Fit in Window, Actual Size, 200%, and so on), but in QuarkXPress you can actually type in a zoom percentage. PageMaker's custom percentages are available only via the new magnifying glass tool.

Measurements, rulers, and guides In almost every instance, QuarkXPress offers finer measurement increments than PageMaker. In QuarkXPress you can use arithmetic operators (+, -, /, and *) and mixed measurement systems (3p5+1i, for instance) in the Measurements palette and in all dialog boxes. In PageMaker you can use only + and -, you can use them only in the Control palette, and you can't mix measurement systems.

In PageMaker you can specify a custom vertical ruler increment, and objects and guides will snap to ruler increments—both features are great when you're working with leading-grid–based designs.

Long documents If you spend much time producing lengthy, text-intensive documents, PageMaker is the hands-down choice. Aside from its more sensibly implemented style sheets, it creates tables of contents for multiple documents, renumbers pages for multi-

	PM	QXP
Hyphenated words in dictionaries		
Check spelling of words with ligatures		[illegible]
Foreign-language dictionaries		
Type attributes		
Type-size range/increments (in points)	4–650/.1	5–250/.1
Horizontal scaling range/increments (in percent)	5–250/.1	25–400/.001
Vertical scaling		
Scale type by dragging box		
Definable flex space		
Adjust small caps/script preferences		
Adjust superiors		
Automatic drop caps		
Paragraphs, leading, keeps, and breaks		
Leading increments (in points)	.1	.001
Specify position of first line in text box		
Copy formats between paragraphs		
Align paragraphs to leading grid		
Display leading grid		
Vertical alignment and justification		
Flag widows and orphans		[illegible]
Prevent line breaks in selected text		
Continued lines		
Kerning and tracking		
Kerning and tracking increments (in ems)	.01	.00005
Number of tracks per font	5	1
Paragraph-level tracking control		
Kerning and tracking editors		
Automatic expert kerning		
Hyphenation and justification (H&J)		
Dictionary hyphenation		
Same dictionary for spelling and hyphenation		
Foreign-language hyphenation		
Control hyphenation of capitalized words		
Control minimum hyphenated word size		
Hyphenate words containing ligatures		[illegible]
Flag loose/tight lines		
Save and load H&J settings		
Copy H&J settings between documents		
Automatically justify single-word lines		
Suggest hyphenation points		
Tabs		
Move tab-stops numerically		
Right-margin tab stops		
Align-on tab stops		
Maximum tab-stops per paragraph	40	20
Tab ruler aligns with text block		
Special characters		
Automatic ligatures		
Breaking and nonbreaking characters		
Indent to here		
Styles and style sheets [F]		
Styles and local formatting		
See style applied to current paragraph		
Apply local formatting to existing style		
Import style sheets from other documents		
Apply styles from Control/Measurements palette		
Redefine style based on local formatting		
Keyboard shortcuts for styles		
Find and change styles		
Text import/export filters		
Mac word processing filters		
IBM word processing filters		
Filter for tags and codes		
Text flow and text wrap		
Multicolumn text boxes		
Automatic irregular wraps		

ple consecutive documents, and has the best indexing system I've ever seen. QuarkXPress's Section feature offers similar page-numbering capabilities, but with very long documents, files get huge.

Scripting You can write simple scripts in PageMaker and run them using the Run Script addition, but Run Script doesn't support queries or any procedural commands (conditionals, loops, and so forth). To tap those powers, you need to run scripts with an external application (HyperCard, Frontier, AppleScript, or QuicKeys, for example) via Apple events. With QuarkXPress, you can run scripts only via Apple events.

Rather than implementing the full Apple events scenario, PageMaker supports only the DoScript and EvaluateExpression Apple events, limiting the ways you can address and control objects. Also, PageMaker scripting can't address any Story Editor functions such as Find and Change (arguably the most important uses for scripting). QuarkXPress provides a robust implementation of Apple events, though with some limitations. Notably, you can't control printing via scripts (a task that PageMaker handles impressively).

PageMaker's *Script Language Guide* (free if you send in a card) provides scanty (and largely incomprehensible) coverage of scripting via Apple events. QuarkXPress comes with a 12-page scripting introduction booklet and a comprehensive scripting guide on disk.

Interchange with Windows versions For one-way movement of files between the Mac and Windows (and vice versa), both programs convert graphics, fonts, and character sets as necessary (in PageMaker you can save font substitutions so it remembers them for the next conversion).

When moving files back and forth between Mac and Windows versions, however, PageMaker requires you to convert Mac PICT graphics to Windows Metafile format and vice versa (with significant loss of quality when converting more than once).

QuarkXPress uses either PICT or WMF as its source format, without conversion.

Both programs work best across platforms if you use IBM-format EPS and TIFF files, with DOS filenaming conventions. You can lose the link to the source file in QuarkXPress, however, along with the graphic's cropping and scaling.

QuarkXPress 3.1 for Windows can open QuarkXPress 3.2 for Mac files, though you lose EfiColor profile information, and flipped graphics don't work, among other things. These problems may be addressed when 3.2 for Windows ships. (For more information, see the feature "Cross-Platform File Transfer" in this issue).

Page Elements

Lines, boxes, ovals, and polygons With QuarkXPress's box-oriented approach, you can create oval and polygonal graphic containers. PageMaker only supports rectangular graphic crops, and you have to import polygons from a draw program. QuarkXPress's other attribute settings—especially graduated fills—put it well ahead of PageMaker in this category.

Imported graphics QuarkXPress's Picture Contrast

	PM	QXP
Wrap all four sides		
Text-flow inside shape	[G]	
View auto text-flow page by page		
COLOR		
Color in the program		
Color palette		
Integrated color-management system		
Drag-and-drop color application		
Import named colors from EPS files		
Move colors between publications		
Color separations		
Process separate RGB TIFFs and PICTs		
Trapping		
DCS/OPI support		
Selectively overprint imported graphics		
Remap named EPS colors to other plates		
Separate color EPS files onto spot-color plates		
PRINTING		
Print and print-status dialog boxes		
Logically organized controls		
Remember previous print settings		
Save/load printing settings		
Reimport missing picture during print sequence		
Page ranges and scaling		
Print noncontiguous page ranges		
Print multiple consecutive documents		[H]
Print master pages		
Reduce to fit on paper/center		
Scaling range (in percent)	5–1600	25–400
Print thumbnails		
Print proofs		
Print spreads on single sheets		
Automatic page imposition		
PostScript, images, and color		
PostScript error handler		
Font downloading		
Downsampling of bitmapped images for printing		
Convert spot colors to process at print time		
Selectively print multiple color plates		
DOCUMENTATION, ONLINE HELP, SUPPORT, AND PRICING		
Manuals and help		
Documentation		
Tutorial		
Online help		
Tech support		
Knowledgeable, helpful phone support		
Toll-free number	[I]	
Annual support fee	$99–$308	$150
Support with purchase (number of days)	90 [J]	90 [K]
Support with upgrade (number of days)	30	0
Pricing		
List price	$895	$895
Upgrade price from previous version	$75	$15

[A] Limited by memory. [B] Only with autocreate templates. [C] In Story Editor only. [D] If ligatures are generated automatically by QuarkXPress, hyphenation and spelling check work properly. [E] Available via free Bobzilla XTension. [F] Aldus follows industry convention and calls each set of paragraph-formatting attributes a style. A group of styles is a style sheet. In QuarkXPress, styles are referred to as style sheets, and there's no name for a collection of those entities. The PageMaker terminology is used here. [G] Only through undocumented workaround. [H] Can be done from the Finder. [I] Available with support contract only. [J] From date of first call. [K] From date of registration.

dialog box surpasses PageMaker's, providing a variety of tools for adjusting the contrast curve, but it still doesn't provide the kind of controls necessary to adjust scanned images well. For screen display of bitmaps, QuarkXPress offers more control over bit depth and resolution than PageMaker.

Grouping, locking, alignment, and distribution PageMaker actually groups items via an Addition, converting the objects to EPS format (slowly—it takes more than 30 seconds to group two objects on a Centris 650). Amazingly, you can ungroup the items (about 10 seconds), but grouping eradicates text-wrap settings, permanently breaks links between threaded text blocks, and prevents you from printing on non-PostScript printers until you ungroup. And you can't edit items within the group, as you can with QuarkXPress.

PageMaker's inability to align items (a feature available in MacDraw since 1985) is just plain ridiculous. QuarkXPress provides comprehensive alignment and distribution controls. The programs are equivalent for step-and-repeat duplication, except that with PageMaker you can repeatedly paste equally offset duplicates for a more interactive approach.

In-line/anchored elements and paragraph rules QuarkXPress's box approach means you can use in-line text boxes in addition to in-line graphics (PageMaker only supports in-line graphics). In QuarkXPress you can automatically align anchored boxes to either the baseline or top-of-caps height, which you can't manage as easily with PageMaker. With PageMaker you can drag an in-line graphic up and down relative to the baseline, however; in QuarkXPress you have to use the Baseline Shift command.

If a paragraph rule in PageMaker extends beyond the leading of the line, it pushes ensuing text down, requiring some arithmetic to figure out ensuing baseline positions. In QuarkXPress the rules simply overprint on adjacent text, and you adjust Space Before and Space After settings in the Formats dialog box to make room.

Text and Type

Word processing While QuarkXPress's word processing features sound impressive, PageMaker's Story Editor makes large-scale editing much faster and more convenient.

Both programs will (finally!) insert smart (curly) quotes for you while you're typing, but QuarkXPress offers five methods of inserting smart quotes for different languages. PageMaker's Bullets and Numbering Addition adds bullets or consecutive numbers to the beginnings of paragraphs—handy, but of no use for section (1.2.4) or figure (Figure 2-3) numbering.

Check spelling For larger dictionary edits, the ability to edit QuarkXPress's dictionaries as text files is a big help. PageMaker's advantage is that it uses the same dictionary for spelling and hyphenation, so adding words updates both. For foreign-language spelling and hyphenation, you can buy 20 international dictionaries from Aldus for $99. With QuarkXPress, you need to buy Quark Passport (which supports 13 languages) for $2495.

Type attributes In PageMaker you can set preferences to choose small caps and scripts for any selection of text. QuarkXPress sets these preferences for

WHAT'S NEW IN PAGEMAKER 5.0

This is a checklist of new features added to PageMaker since version 4.2. PageMaker 5.0 costs $895; the upgrade price from version 4.2 is $75. For more information, call Aldus Corporation at 206/628-2320.

Interface and Document Construction
- Multiple open publications.
- Improved control palette, including character and paragraph formatting modes, style sheets, reflection, and skewing.
- Library palette.
- Custom zoom percentages and magnifying glass tool.
- Drag items between publications.
- Tile and stack windows.
- Improved Sort Pages Addition.
- Automated template scripts.

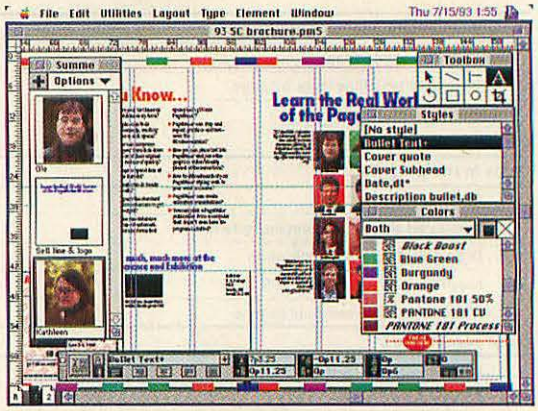
Page Elements
- Rotation and skewing of text and graphics in .01-degree increments.
- Rotated text editable in layout view.
- Rotate in-line graphics.
- Horizontal and vertical reflection of text and graphics.
- Grouping Addition.
- Custom line weights and tint percentages.
- Definable nudge increment.
- Object-level overprinting for PageMaker graphics.
- Transparent patterned lines.

Graphics
- More import filters—Photo CD, DXF, WPG.
- TWAIN support.
- Windows Metafile-to-PICT conversion.
- Ability to link to external EPS files.

Text and Type
- Panose font mapping.
- Kerning and tracking editors.
- Numeric kerning.
- Expert Kerning Addition.
- Support for multiple language dictionaries.
- Search/replace superscripts/subscripts and case settings.
- Live running heads Addition.
- Baseline shift.
- Auto–text flow without displaying every page.
- Automatic resizing of tab ruler for screen size.

Color
- Built-in process-color separation.
- Can apply spot-color tints to type and lines.
- Ability to change line and fill colors from Colors palette.
- Imports named colors from EPS graphics.
- Colors palette displays color swatches and identifiers for imported EPS colors, tints, and process and spot colors.
- Custom color libraries.
- Color-level overprinting.
- Spot-to-process color conversion at print time.

Printing
- Redesigned print dialog boxes for more logical interface.
- Works with print spoolers.
- Print noncontiguous page ranges.
- Save and load print settings.
- Print multiple publications in batches, with different print settings.
- Definable number of thumbnails per page.
- Booklet imposition.
- Center page on paper, scale to fit.
- Scaling when printing up to 1600%.



PageMaker's Palettes PageMaker 5.0 boasts a much improved Control palette and Colors palette (which displays information on process, spot, tint, and imported colors), as well as a Library palette for storing page elements.

a whole document (though it provides both vertical and horizontal scaling for small caps).

PageMaker comes with a crude Addition for creating drop caps that has two big problems: line-ending discretionary hyphens and automatic hyphens disappear, and editing the paragraph wreaks havoc with line breaks. QuarkXPress's drop-cap feature is fully integrated and has only minor failings by comparison.

Paragraphs, leading, keeps, and breaks Both QuarkXPress and PageMaker provide controls to align paragraphs to a leading grid, but PageMaker's are much more flexible, since they work on a paragraph, rather than document, level.

While QuarkXPress provides for automatic, continually updated "Continued from" and "Continued on" lines attached to text boxes, PageMaker includes a simplistic Addition that tacks continued lines (which don't update with document changes) onto single, selected text blocks.

Kerning and tracking With one exception—PageMaker's relatively coarse kerning increment (.01 em in 150-point type is 1.5 points—a lot)—PageMaker definitely has the lead in this area. The program provides five editable tracking levels for each font, applicable on the paragraph level. QuarkXPress offers one editable track per font, applicable on the document level—on or off.

QuarkXPress's kerning and tracking editors save QuarkXPress-specific kerning and tracking tables for each font. PageMaker works similarly for tracking tables, but its impressive stand-alone kerning editor changes the metrics in your fonts, and the changes carry through to other applications (this may or may not be what you want).

Hyphenation and justification (H&J) PageMaker's justification routine emphasizes word spacing (instead of letterspacing) more than QuarkXPress's, resulting in generally better spacing. QuarkXPress uses algorithmic hyphenation (not as good as dictionary hyphenation), which you can supplement with your own exception dictionary (amazingly, you don't get one with the program). With PageMaker's impressive ranked dictionary hyphenation, words can have three levels of preferential hyphenation points.

QuarkXPress' ability to save H&J settings makes it easy to apply those settings to paragraphs or styles,

WHAT'S NEW IN QUARKXPRESS 3.2

This is a partial list of new features added to QuarkXPress since version 3.1. QuarkXPress 3.2 costs $895; the upgrade price from version 3.1 is $15. For more information, call Quark at 303/344-3491 or 800/788-7835.

Interface and Document Construction
- Open up to 25 documents.
- Tile and stack windows.
- Auto Backup and Auto Save.
- Improved Document Layout palette.
- Scripting via Apple events.
- Improved keyboard shortcuts.
- Improved EPS save options.
- Copy or drag linked text boxes between documents.
- Gray out pictures while scrolling.
- Interrupt screen redraw with ⌘-period (.).
- Includes run-time version of Frontier.
- Arithmetic operators in any field in any dialog box.

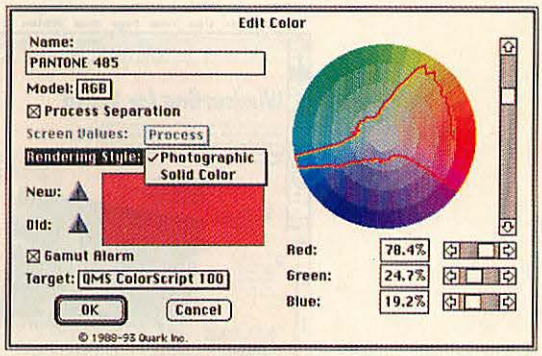
Page Elements
- Reflect text and graphics horizontally and vertically.
- Skew text and graphics.

Graphics
- Suppress picture printing from Picture Usage dialog box.
- Improved import filters: Photo CD, WMF, BMP, PCX.

Text and Type
- Cross-platform font mapping.
- Find and replace fonts on master pages.
- Scale text by scaling text box.
- Automatic smart quotes while typing.
- Support for Multiple Master fonts.
- Horizontal and vertical type scaling.
- Greater size range for drop caps.
- Next-style option for style sheets.
- Improved control over imported styles.
- Drag-and-drop text editing.

Color
- EfiColor color-management system for color consistency across devices.
- Process separation of RGB TIFFs and PICTs.
- Drag-and-drop color application.
- Additional color blend options.

Printing
- Collect for Output for transfer to service bureaus.
- Thumbnail printing.



EfiColor XTension The EfiColor color-management system adds several features to QuarkXPress's Edit Color dialog box, including a gamut map of available colors for the selected device (color wheel), gamut-alarm icons (triangles with exclamation points) for out-of-gamut colors, and two color-mapping methods for out-of-gamut colors (Rendering Style).

or copy them between documents. In PageMaker, you often have to enter the settings from scratch—not difficult, but annoying.

Tabs QuarkXPress's right-margin tab stops sit exactly at the right edge of the text box and move as you resize the box. Align-on tabs work like decimal tabs, but with any character. QuarkXPress's Auto-Apply option and tab-ruler alignment also make it much easier to set tab stops than in PageMaker.

Special characters QuarkXPress's very useful Indent to Here character indents the text following it to that character's position (though the indent doesn't hold over page breaks). And QuarkXPress's wonderful automatic ligature generation replaces fi and fl characters with ligatures, breaking them into separate characters when letterspacing increases beyond a specified amount.

Styles and style sheets When applying a paragraph style in QuarkXPress, you either retain all local formatting in the paragraph or eradicate it all. With PageMaker you can change styles but retain local type styling only (bold, italic, and so on), which is almost always what you want to do. QuarkXPress provides precise control over incoming styles whose names match those in the target document, but replacing all your styles with the incoming ones is a ponderous process that's a breeze in PageMaker.

In QuarkXPress you can assign keyboard shortcuts to styles (using numeric keypad and function keys only). PageMaker assigns function-key shortcuts to styles by their order in the Style palette (which isn't terribly mnemonic or useful).

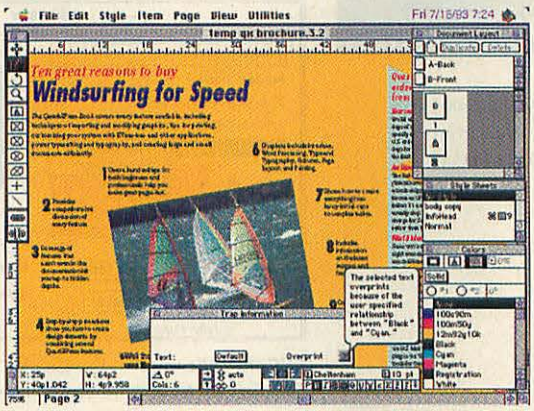
Text import/export filters Both programs offer good filters for Mac word processors, but PageMaker also includes IBM word processor filters. The XPress Tags filter is great for transferring and manipulating fully formatted text using straight text coding. It's far superior to PageMaker's anemic Smart ASCII and Rich Text Format (RTF) filters.

Text flow and text wrap QuarkXPress's text box approach allows for multiple-column text boxes. Change the number of columns and the text reflows accordingly—a tiresome task in PageMaker. QuarkXPress also automatically creates editable wraps around irregular shapes. In PageMaker you have to create and resize irregular wraps manually.

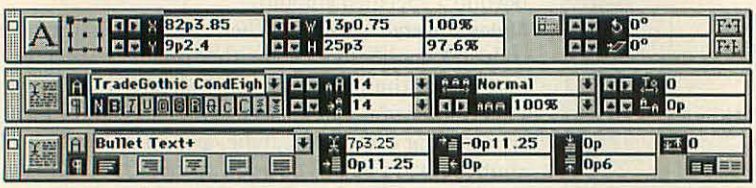
Color

Color in the program QuarkXPress includes the EfiColor color-management system for improved screen-to-printer-to-output fidelity. Among other things, it adds a Gamut Alarm to the Edit Color dialog box, so you can see if a color you're defining is beyond the capabilities of your target device. EfiColor's inability to adjust output colors for EPS graphics makes it less useful than it could be, however.

PageMaker's new Tint option finally makes the program equivalent to QuarkXPress for spot-color work, and PageMaker's ability to import named colors from EPS graphics is a fabulous feature that every program (including QuarkXPress) should adopt.



Speed Palettes In addition to its Measurements, Style Sheets, and Color palettes, QuarkXPress offers a Document Layout palette (seen at right) for rearranging pages and master pages, and a Trap Information palette with balloon information explaining automatic trapping decisions.



Controlling PageMaker PageMaker's Control palette offers three modes, greatly expanding its powers: object manipulation (top), character formatting (middle), and paragraph formatting—including styles (bottom).

You can apply colors using drag and drop with QuarkXPress's Color palette, but PageMaker's palette provides more information about colors—native or imported, spot, process, or tint (and you can toggle a color between spot and process with a keystroke). With QuarkXPress, you can simply append all the colors from another document. With PageMaker, you have to create a color library (using an Addition), then use that library in the target document.

Color separations In PageMaker you can edit an EPS color so that it prints on a different color plate (merging Pantone 485 CV with Red PMS 485, for instance). You can also apply a spot color to a color EPS and print the whole graphic on a single spot-color plate.

PageMaker's new object-level overprinting controls allow for simple manual trapping, but the tools aren't a match for QuarkXPress's explicitly designed trapping tools. With more complex trapping jobs, however, both programs break down. Best bet: Get your service bureau to run jobs through Aldus TrapWise and deal manually with situations TrapWise can't handle.

Printing

Page ranges and scaling PageMaker allows you to print as many thumbnails per page as you wish; QuarkXPress only prints thumbnails at 12.5 percent. QuarkXPress can use the low-resolution screen rendition of EPS graphics for printing proofs, however; PageMaker either prints a box with an *X* in it or the full-resolution EPS file.

PageMaker's nifty Make Booklet Addition creates relatively simple impositions for either saddle-stitched or perfect binding—it even adjusts for binding creep. You can move pages manually in QuarkXPress to achieve some of this, but PageMaker handles it automatically (if slowly). And PageMaker now lets you print noncontiguous page ranges, like 1–5, 7, 99–105, and 108–109.

PostScript, images, and color PageMaker provides control over whether fonts are downloaded at print time, but it insists on downloading fonts even if you've manually downloaded them to printer memory, which can amount to extra hours of printing in the course of a day or week. In QuarkXPress you can't control font downloading, but it does handle automatic downloading more sensibly.

Documentation, Online Help, and Support

Manuals and help Both programs include documentation sets that are well ahead of others in the genre, providing step-by-step instructions, conceptual explanations, and command references. PageMaker's 80-page, four-color commercial printing guide, interactive tutorial, and comprehensive hypertext-based online help, however, make QuarkXPress's print-based tutorial and skimpy help system look slapdash by comparison.

Tech support Unfortunately, neither vendor scored particularly well in answering our battery of tech-support questions. Only one of the calls resulted in a rating better than poor (the one successful call—to Aldus—resulted in good answers with no waiting). While the tech-support representatives were friendly and helpful, they were (in five cases out of six) sadly lacking in knowledge of how their products work.

Which One's for You?

You can create consummately professional publications of almost any type with either of these programs. The differences lie in how easily you can produce those documents.

For longer and more text-intensive documents, PageMaker's superior style sheets and book tools give it the edge. For more design-intensive work (brochures, ads, fliers), QuarkXPress's grouping, locking, alignment, and distribution tools make it a better choice. PageMaker handles color EPS files and the mechanics of color separation better (making it a good choice for production work), while QuarkXPress has EfiColor color management (a plus for design work and separating RGB files directly).

If you have a liberal software budget, QuarkXPress may be the best choice because of all the available XTensions. Those XTensions go a long way toward minimizing QuarkXPress's failings vis-à-vis PageMaker—and taking it into whole new realms. Additions—at least at this point—just don't provide the same advantage for PageMaker. **m**

Contributing editor STEVE ROTH is coauthor of *Real World PageMaker* (Random House, 1993; formerly published by Bantam Books), editor of *The QuarkXPress Book* (Peachpit Press, 1993), and coauthor of *The Underground Guide to PageMaker* (Peachpit Press, 1993) and *Real World Scanning and Halftones* (Peachpit Press, 1993).

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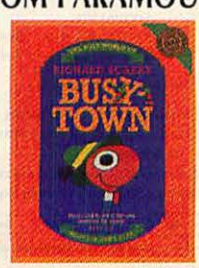

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IBM AND COMPATIBLES: 386 or higher, 16 MHz or higher, 4 MB RAM, VGA with 256 colors, Windows 3.1 or greater, mouse, SoundBlaster, SoundBlaster Pro or compatible, external speakers. Diskette version requires 10 MB hard disk space. MEGA version requires CD ROM drive.

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Circle 92 on reader service card

EDITED BY DAN LITTMAN

At Work

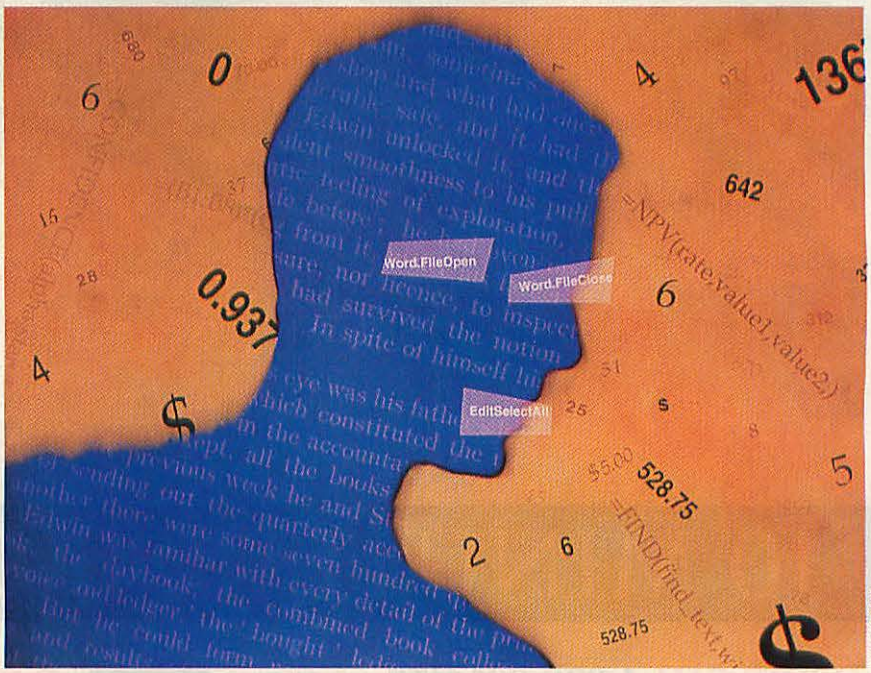
THE LATEST TOOLS FOR BUSINESS COMPUTING

Word 6, Excel 5: Radical

NOT CONTENT WITH INCREMENTAL improvements to the products that dominate two categories of Macintosh software, Microsoft plans major changes that will begin to appear in its next versions of Word and Excel. The most significant new direction is expert-system technology, which will make its debut in Word 6. A bit more down to earth, both new versions will incorporate a programming language (called Word Basic in Word and Visual Basic in Excel) for customizing both programs, controlling them procedurally, and tying them together.

Word 6 Microsoft's long-term goal is to replace the user interface with artificial intelligence that figures out what the user wants to do. First steps in Word 6 will be a glossary that creates and names entries almost automatically, and AutoCorrect, which corrects misspelled words, capitalizes sentences, and so on while you work. Auto-Format will simplify creating indexes, tables of contents, and tables, and will bullet and center text. Other Word news: drag-and-drop between windows, movable tool bars, vertical rulers, and style sheets for character styles.

Excel 5 Excel's interface shows no signs of withering away, but in version 5 it will resemble Word's interface more closely. Other major changes will include support for custom lists to use with Auto Fill, in-cell text editing, and a worksheet auditor that draws arrows between precedent and dependent cells. A new charting module will support independent manipulation of every element and adding data to an existing chart; provide trend lines, error bars, and doughnut charts; and make it easier to combine chart types. PivotTables, with a Pivot Wizard, will simplify flopping data axes; it will be designed for accessing database information and will aggregate data across fields and provide other standard summary statistics. Microsoft also promises guidance to help the innumerate use Excel's statistical functions. Excel's established macro language will live alongside Visual Basic, and Microsoft says older macros will run under 5.0.



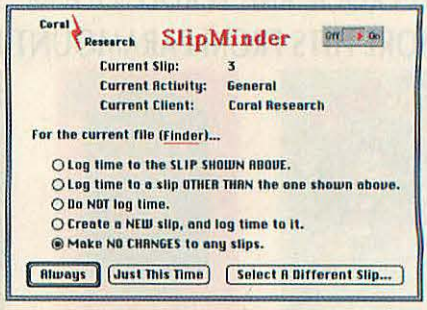
WILL CROCKER

The Mac versions of both programs are scheduled to ship late in the first quarter of 1994. Pricing was not set at press time. Microsoft, 206/882-8080.—D.L.

Making Timeslips Smart

AN ADD-ON FOR THE TIME-BILLING package Timeslips will plug a hole in Timeslips' design to make recording your work automatic.

SlipMinder will allow you to assign any file to a Timeslips record and record how long each file is in use—something Timeslips doesn't do on its own. Every time you open a window or move it to the front, its billing slip's timer will begin



The SlipMinder add-on to Timeslips' time-billing system allows you to tie windows from any program to any slip.

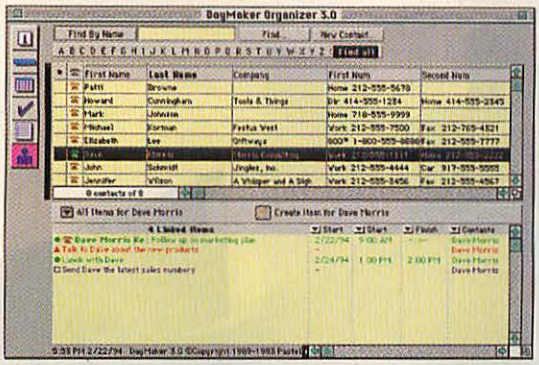
running; and when you close a window or send it to the back, its timer stops. SlipMinder can rack up time for multiple files on a single slip.

SlipMinder, which will also work with Timeslips' PowerBook product LapTrack, is being developed by Coral Research at 702/831-9346. It is scheduled for a late October ship; the price was not set at press time. Timeslips 2.1 is $299.95, and LapTrack 1.0 is $79.95. Timeslips, 508/768-6100.—D.L.

DayMaker Reorganized

PASTEL IS EXPANDING ITS PERSONAL information manager DayMaker with contact-management features. The slightly renamed DayMaker Organizer 3.0 sports a new item type that resembles a structured database record for recording contact names and addresses, with seven fields for telephone or other numbers, four user-defined fields, and a notes field. All contacts' first names, last names, and companies appear in a scrolling list and can be selected and dragged onto the calendar or to-do list to set up callbacks, link a name to another item, and so on.

Pastel hasn't abandoned plans to sell plug-in modules that add new functionality to DayMaker; in fact, the contact manager is a plug-in module, though it will be bundled with the new version. DayMaker Organizer 3.0 is scheduled to ship for $149 before you read this. Pastel, 212/941-7500.—D.L.



Names in DayMaker Organizer's new contact manager can be linked to items in the to-do list (as shown above) or to items in the calendar.

Cybermeeting

WORLD BENDERS IS DEVELOPING Meeting Space to take meetings out of the conference room and onto your network. Meeting Space walks you through setting up an agenda to make sure you invite the right people and gather the necessary information before convening. Once you're all online, Meeting Space provides tools for managing who has the floor, a text window and a whiteboard that all participants can share, and a way to shoot graphics over the network to make presentations. Discussions are saved, eliminating the need to write up minutes. Security features provide control over who can join a meeting or read the discussion.

LOURDES LIVINGSTON

Meeting Space is not really designed for use as a bulletin board system. Users can append messages at any time, but there is no threading and no way to inform others when new messages are added. Meeting Space is scheduled to ship in November for about $300 per user. World Benders, 603/881-5432.—D.L.

IN BRIEF

■ **DA Outliner Revived** Portfolio Systems acquired the desk-accessory outliner Acta; is changing the outliner's name to Dyno Notepad; and plans new versions for Mac, Windows, and Newton. The Mac version should ship for $59.95 before you read this; the Newton version is scheduled for late 1993. Dyno Notepad will have a new feature that is nifty for to-do lists: you can format topics with check boxes, and when all the child-topic boxes are checked, the parent topic checks itself off. Portfolio Systems, 408/252-0420.

■ **World Trade Centers Go Online** The World Trade Centers Association is a worldwide organization of centers providing such business services as meeting rooms and translators for traveling businesspeople. The association has developed a Mac front end for its electronic bulletin board system, WTC Network, which provides E-mail and facilitates international deal making. For information on WTC Network, call 212/435-2552.

■ **Cricket Graph Hops to Version 1.5** Cricket Graph III version 1.5 adds table graphs and histograms, allows you to set the length of error bars, and provides several polynomial functions for curve fitting. Graphs can be converted to objects, and the program is designed to work with Cricket Draw through publish and subscribe. Graph III 1.5 lists for $195. CA-Cricket, 516/342-6000.

Fair Witness Adds Custom Forms

VERSION 2.0 OF FAIR WITNESS EXtends the exotic planning tool's feature set in some practical ways. Fair Witness is basically a table—rows and columns—but tasks, dates, names, figures, and other information stored in its cells can be rearranged in an outline view, displayed as a Gantt chart, calculated, and even voted on over the network.

Version 2.0 adds a user-designable form view so that you can see the contents of a long row of cells gathered on a single page. In the new Chalkboard view, you can mix cells from different rows and draw with a tool that interprets your scrawls and converts them to straight lines, boxes, circles, and other shapes. Fair Witness implements AppleScript thoroughly: it can record your actions as scripts, and it supports Apple-event suites that communicate with TouchBase Pro, Now Up-to-Date, Excel, and other applications.

Fair Witness 2.0 is scheduled to ship in mid-November for $295. Chena Software, 215/770-1210.—D.L.

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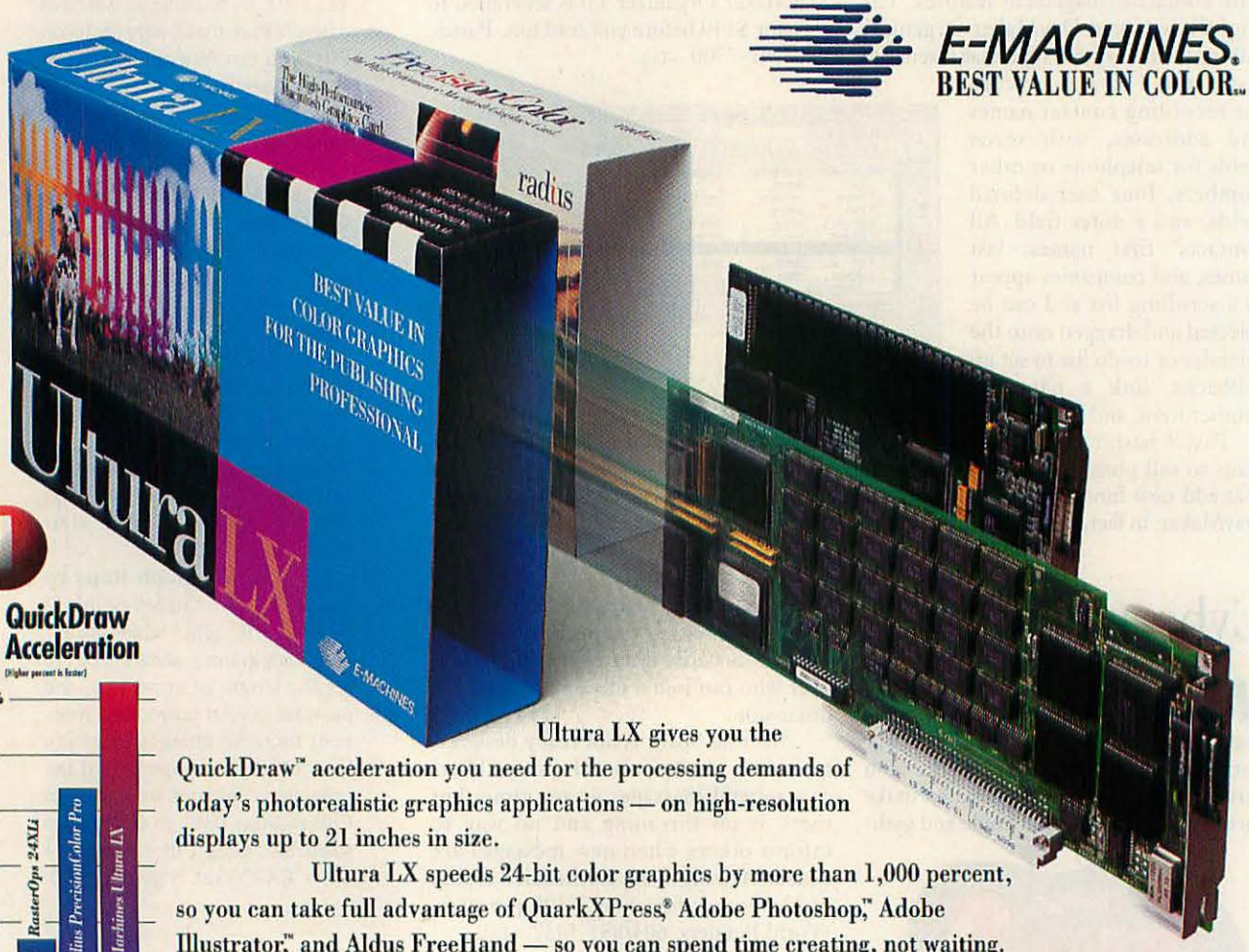

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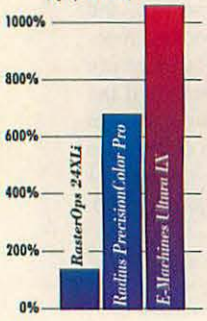

Performance percentage based on Potrero Color Publishing Benchmark 2.0 running on a Macintosh Quadra™ 950.

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Circle 136 on reader service card

BY JIM HEID

Working Smart

Data Processing on the Mac

DO YOU SUSPECT THAT YOUR MAILING list contains thousands of duplicate entries? Did a temporary employee post 948 checks in your accounting system with the CAPS LOCK KEY DOWN? Is the data you need to look at with a spreadsheet stored in some oddball format on the company mainframe? Do you need to extract some records from two different files and combine them into a third file? And how can you get those product descriptions from a FileMaker Pro database into a catalog you're laying out with a publishing program?

Normal database programs aren't designed for tasks like these, so you need specialized data processing utilities. Data processing utilities don't have features for creating fancy data entry screens, typing new records, or browsing, because they work with existing databases—created with Mac data managers or transferred to the Mac from other computers.

We aren't talking glamourware here—the utilities I'll describe are no-frills affairs from the unsung-heroes ward. But when you need their data-massaging skills, they're priceless.

How Data Processing Works

The utilities I'll concentrate on are WorksWare's DataMate, Seawell MicroSystems' DataMerge, and Main Event Software's Rosanne (I worked with an early prototype of Rosanne; Main Event expects to ship Rosanne before the end of the year). I'll also look at some data processing utilities geared for database publishing (see "Publishing Your Database").

Data processing utilities operate on text files—files containing only raw text—not on files formatted by a data manager. If you need to modify a database created with, say, FileMaker Pro, you must export the database to a text file. You can also use a data processing utility to process spreadsheet data—just save the spreadsheet in text-only format.

A data processing utility accepts one or more of these text-only *input files*, modifies the data according to your specifications, and then creates a text-only *output file*, which you can import back into your database program. Processing the data into the form you want often requires several steps, so the final product may benefit from some advance planning. In fact, you might be wise to sketch out the steps to make sure you're being efficient—it doesn't make much sense to first sort your data on one field if you plan to delete most of the records based on the contents of a different field.

Case Workers

A database whose entries are in all-capital letters is fine for printing mailing labels and the like, but it's unsuitable for tasks such as creating customized form letters using a word processor's mail merge feature; nothing gives away a form letter more than a salutation such as "Dear MR. DAVE BYRD."

STUART BRADFORD

Basic data managers such as FileMaker cannot convert case. With the programming language in high-end databases such as 4th Dimension or FoxBase+/Mac, you could write a program to examine each word and capitalize its first character. But a much easier method is to use WorksWare's DataMate.

After you have specified the input file, indicate which fields you want DataMate to include in the output file, select the field (or fields) whose case you want to convert, and choose Text Conversion from the Options menu. Select the desired conversion option, click on OK, specify a name for the output file, and then click on Process.

Unfixing Field Lengths

A thornier chore involves modifying a database that was created on a different type of computer, such as a minicomputer or mainframe. To be able to bring the data into a Mac data manager, you must ensure that the database is properly *delimited*—that each field and record is separated so that your database program will be able to tell where one ends and the next begins.

Most Mac database managers (and spreadsheets) can import and export files with the fields delimited by tabs or commas and the records separated by carriage returns. But if your database came from a minicomputer or mainframe, it may not have these delimiters. Mini and mainframe databases often have *fixed-length records*: instead of each record's length varying to accommodate the data within it, all records are the same length, and each field has a specific number of characters—15 for a last name, for example, or 2 for a state abbreviation. If a field isn't full, the database manager simply tacks on empty spaces. (The fixed-length data format lets the computer run at full steam with no need to watch for the next tab or comma, but this format truncates records that are too long.)

All three packages can convert fixed-length data to a delimited format. The

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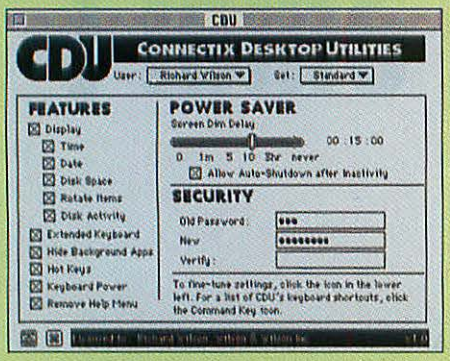

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PUBLISHING YOUR DATABASE

The art and science of combining a database with a publishing program is called, logically enough, *database publishing*. Any structured document that originates as a database is a candidate for database publishing; examples include telephone and personnel directories, catalogs, real-estate listings, and price lists.

Most Mac database managers provide extensive layout features, so why bother going to a publishing program? One reason is superior typographic features, such as text kerning and tracking, to improve legibility and aesthetics. Publishing programs also offer superior printing and graphics-manipulation features.

There's a first-rate database-publishing utility for each of the two top publishing programs. For Aldus PageMaker, there's Step Two's DataShaper 1.2, and for QuarkXPress, there's Em Software's XData 2.0. The two utilities are similar. After exporting a database to a delimited text file, you create a template that tells the publishing program how to format each field—where to place it on the page and what typographic attributes to use. You then import the database text file and apply the template. Both utilities have advanced features—they can import graphics, print text only if certain conditions are true (for example, you can set them up not to print a field label reading "Fax Number" if the fax field in the data file is blank), generate automatic headers and footers, and more. DataShaper can also tap into PageMaker's indexing features to automatically index a publication.

If you use ACI US's 4th Dimension database manager and Frame Technology's FrameMaker publishing software, you can get a free database-publishing utility from ACI US. 4D/FrameConnection is a collection of 4D external procedures that enable 4D to generate text files containing data from the database with the necessary formatting codes in FrameMaker's mark-up language. When you import the text files, FrameMaker interprets the codes and formats the fields accordingly.

specific steps vary from package to package, but generally, the process involves identifying each field in the input file and then specifying what kind of delimiters you want in the output file (see "Data Processing on the Mac").

Removing Duplicates

Accumulating duplicate records is especially common in mailing-list databases: slight variations in a name or address become new records in the database. Purging duplicates from the list eliminates sending multiple copies of a mailing to the same household, which saves on postage and printing costs; reducing the number of records in the database also increases performance. DataMate and Rosanne can locate and delete duplicates.

DataMate's Duplicate Record Eliminator dialog box lets you fine-tune what the program flags as a duplicate. You can, for instance, tell DataMate to check capitalization when comparing records. Activating this option lets you snare subtle duplications like "Jack McDuff" and "Jack Mcduff." DataMate can save the deleted records in a separate file, where you can make sure you really want to delete them, or you can have DataMate ask if it should keep or discard each suspect record (though if your database is big, you're going to get mighty bored with that).

DataMate also lets you specify that only certain fields be checked for duplicates. For example, you probably won't want to check the City, State, or Zip Code fields for duplicates—a mailing-list database will be filled with them.

Stripping and Changing Fields

Say your company has a client database containing names and addresses along with buying histories and credit information. You want to use those names and addresses in a new database, but you don't need all the other information. Some Mac database programs let you specify which fields to export, but if you're working with text files that originated on a mainframe, turn to a data processing utility.

Stripping out certain fields involves first specifying the input file and then specifying which fields you want the output file to contain. DataMate, DataMerge, and Rosanne can handle that.

Rosanne has a unique feature that lets you change the contents of fields. The Recode option is Rosanne's equivalent of a word processor's search-and-replace feature. Say your input file contains a State field, but you want the output file to simply reflect what sales territory clients are in—Northwest, Western, Midwest, and so on. Supply Rosanne with a list of the states in each territory, and Rosanne will examine each record's State field and replace the state information with the territory value.

continues

Merging Ahead

Another data processing scenario involves combining databases. For example, if you have several databases, each with sales information for one county, you can merge them to produce a statewide sales database.

DataMerge and Rosanne have merging features. In DataMerge, merging databases involves specifying the input files and then selecting the fields that you want to be written to the output file.

Rosanne's merging features are more sophisticated. It can perform a *relational* merge, which means that it adds a record to the output file only if the contents of fields you specify match values you specify in more than one input file. For example, you could do a relational merge of a database of customer names and addresses with a database of customers' recent purchases to find out how much response you got from an advertisement targeting a certain area. Rosanne could also save records that don't meet both files' criteria to a separate file, which would pinpoint customers who haven't purchased recently.

Other Data Processing Jobs

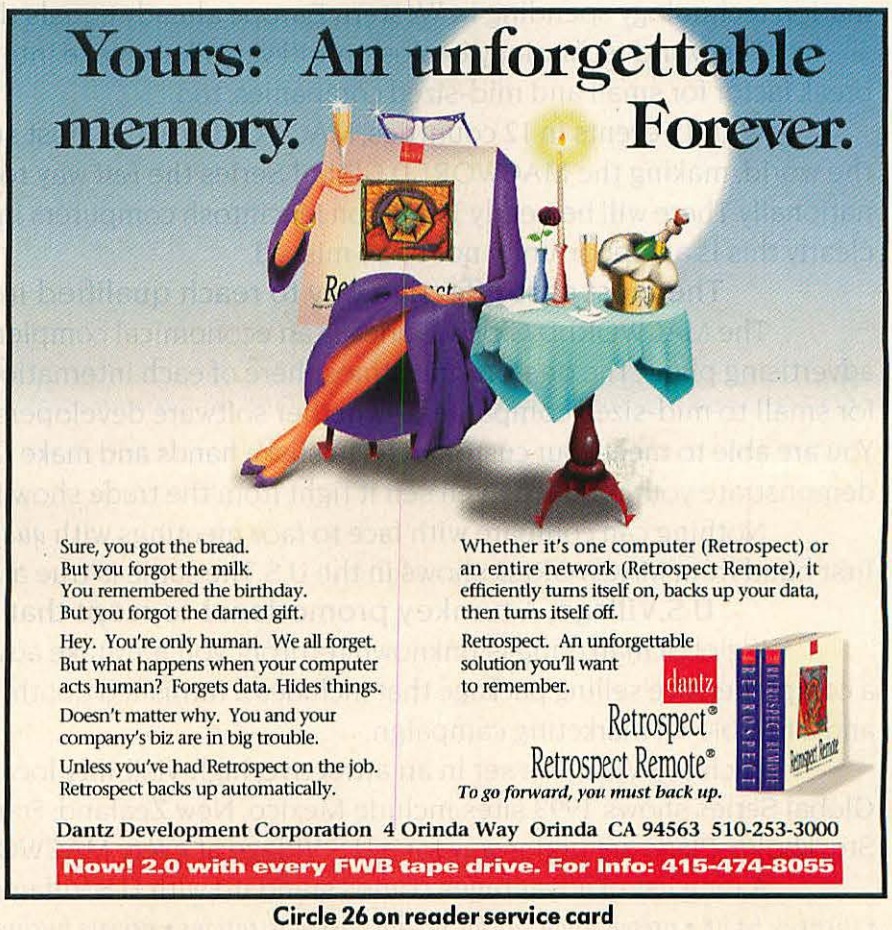
I've covered the primary uses of data processing utilities; here's a brief look at some of the other tasks you can perform.

- **Processing zip codes** The United States Postal Service offers discounted rates on bulk mailings addressed with nine-digit zip codes. For no charge, the Postal Service will add the extra four digits to mailing-list files that you submit—if those files are in a specific format. DataMate can convert your data files to the right format. (For more information about this, contact the Post Office's Diskette Processing Services Department at the National Customer Support Center, 800/238-3150.)

- **Sampling** Sometimes you may want to extract only a certain number of records from a database. Perhaps you want 1000 records out of a 100,000-record database for a test mailing. Or perhaps you have thousands of records of data points generated by a laboratory instrument, and you want to extract a representative sampling of them for statistical analysis or graphing. You can tell DataMerge and Rosanne to write only every *n*th record to the output file—every third record, every tenth, and so on.

- **Scripting** If you need to make the same changes to the same kind of data files repeatedly, specifying field and conversion options for every run gets old fast. Rosanne is the only data processing package that enables you to automate processing tasks with AppleScript (for an

continues



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*Source: International Data Corporation, April, 1993

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Data Processing on the Mac

A typical data processing task involves preparing mainframe data for use in a Mac database or mail merge. In this example, the data is in fixed-length format; each field is the same length in every record and must be converted with a data processing utility to a delimited format, in which a delimiter (such as a comma) separates each field.

Fixed-Length Format
In this mainframe data file, the LASTNAME field contains 10 characters—if the name is shorter, as is SMITH, the field is filled up with blank spaces (a longer name would be truncated).

```
LASTNAME..FIRSTNAME.STREET.........CITY........ST.ZPCOD
SMITH.....JOSEPH....15 MAIN ST......SMALLTOWN...NH.03458
CAMPBELL..AMY.......328 GEORGE ST...NEWVILLAGE..WI.52044
TAYLOR....ROY.......43900 RIDGE RD..WAZOOA......CA.99328
```

Delimited Format
A data processing utility strips out extra spaces and inserts commas so that the Mac can recognize where each field ends and the next field begins.

```
LASTNAME,FIRSTNAME,STREET,CITY,ST,ZPCOD
SMITH,JOSEPH,15 MAIN ST,SMALLTOWN,NH,03458
CAMPBELL,AMY,328 GEORGE ST,NEWVILLAGE,WI,52044
TAYLOR,ROY,43900 RIDGE RD,WAZOOA,CA,99328
```

introduction to AppleScript, see *Getting Started*, *Macworld*, August 1993). If you grew up with the mainframe world's Job Control Language (JCL), you might think of the Rosanne-AppleScript combination as a friendlier and more powerful JCL. For example, Rosanne's AppleScript support lets you create a script that not only processes a database, but also opens Microsoft Excel, imports the data, and then graphs it.

WHERE TO BUY

4D/FrameConnection free; ACI US Developer Services, 408/252-4444, extension 288.

DataMate 1.2 Photoshop plug-ins $99; WorksWare, 818/989-2298.

DataMerge 2.5 $99; Seawell MicroSystems, 206/938-5420.

DataShaper 1.2 $195; Step Two, 602/942-6553.

Rosanne $595; Main Event Software, 202/298-9595.

Snow Report Writer 4.01 $695; Snow Software, 813/784-1845.

XData 2.0 $299; Em Software, available through XChange, 303/225-2484.

• **Generating reports** If you ultimately import your databases into a Mac data manager, you're likely to use its report-layout and -printing features. But if you're working with minicomputer or mainframe databases—or even with dBase or Lotus 1-2-3 files stored on DOS PCs—check out Snow Software's Snow Report Writer. It can create reports that combine data from numerous files, and it provides on-screen rulers and other tools for designing forms similar to (but not as complete as) those of a Mac database manager. Reports can calculate values in fields to produce totals and summary information. You can also specify that fields or records appear in a report only if certain conditions are true—for example, you can create an accounts receivable report that prints only the records for clients whose accounts aren't paid up. You can print a completed report or tell Snow Report Writer to save its contents in a variety of file formats, and if you frequently create the same report, you can convert it to a run-time program that generates the same report automatically. You can distribute the run-time to your colleagues, and they can create the report without Snow Report Writer installed. **m**

Next Month: Planning Ahead for Perfect Presentations

Contributing editor JIM HEID has been writing about the Mac since its introduction. His most recent book, *Macworld Complete Mac Handbook+CD*, is published by IDG Books Worldwide.

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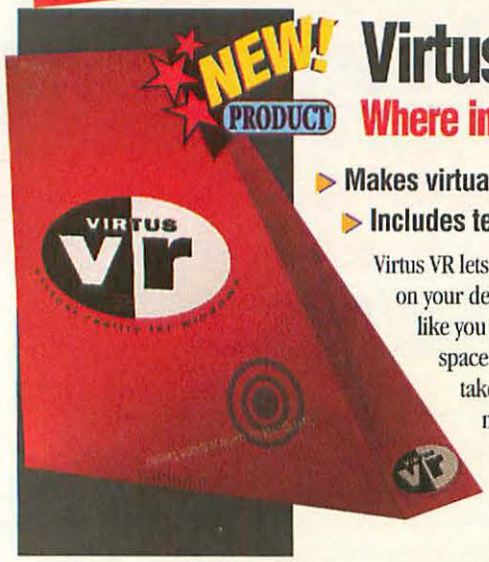

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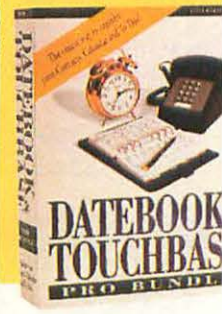

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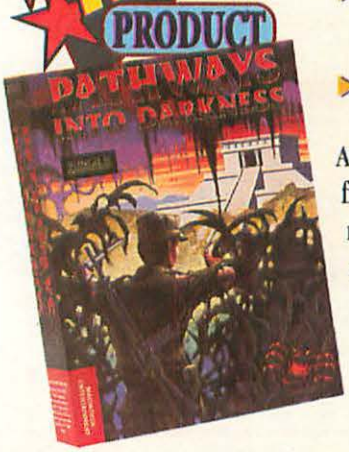

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#05268 **Kaboom! 2.0 ..... $28.9**

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- Multi-source analog mixer

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- Advanced 20 voice stereo synthesizer
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Advances in Text

BY KRISTI COALE

Not long ago, finding documents with information you needed meant looking through bankers boxes full of musty file folders, leafing through the *Reader's Guide to Periodical Literature*, or making yourself queasy skimming rolls of microfiche just to find two paragraphs relevant to your search.

Fortunately, recapturing the past is easier these days, thanks to special software for archiving and retrieving text. The primary function of text-archiving-and-retrieval software is to store text on your computer and to find it for you later. The most basic text-retrieval packages, such as Claris's Retrieve It, Alki Seek, Microlytics' Gofer, and On Technology's On Location, respond to your typing in a word or several words—*jazz* and *Charlie Parker*, for example—by listing all files on the volume you're searching that contain those words. These packages are well suited for individuals who must often dredge up half-remembered facts or deeply nested files.

But many retrieval packages go far beyond simply finding a few words. The high-end packages, as well as On Location, preindex text or store it in an archive—a text database—to speed up the search. Many, including Blueridge Technology's Optix Network NLS (Natural

Retrieval

Locate any information, anytime, anywhere

Language System), Apple's AppleSearch, and Mainstay's MarcoPolo, are designed for network access to an organization's data; in fact, some products, such as Verity's Topic and Excalibur Technologies' PixTex/EFS (Pictures and Text/Electronic Filing System), even let Mac clients access data stored on a non-Mac server. And others, including Knowledgeset's GraphicKRS (Knowledge Retrieval System) and Fulcrum Technologies' SearchTools, actually include programming tools for designing a custom interface, which is especially useful for distributing your organization's archives—or even selling information—on CD-ROM.

Advanced Search Features

A simple word search can return a list of documents so long you'll wish you were back at the microfiche reader. Boolean operators—AND, OR, and NOT—and proximity operators are useful for zeroing in on the text. For instance, a search for *Jazz* AND *Monk* WITHIN 10 *New York* yields documents containing both *Jazz* and *Monk*, but only if these two words are within ten words of *New York*.

Wild-card searching and fuzzy searching, which looks for approximate spellings, come in handy when you don't know the exact spelling of a word, or if you're looking for related words. For instance, *Bio** (the asterisk is a common wild-card symbol) might find *Biology*, *Biochemistry*, and *Biotechnology*.

Some high-end packages, such as AppleSearch, Personal Library Software's Personal Librarian, and Optix Network NLS, provide a natural-language search engine, so you can type what you want to find in plain English. If you look for the phrase "articles about modern music," the program might return files with information about the Spin Doctors, jazz, and Branford Marsalis. Natural-language searching understands relationships between words, either by looking them up in a built-in dictionary and thesaurus, or by analyzing the contents of documents and finding words that frequently occur together.

Even with all these search tools, you can wind up with a lengthy list of retrieved files. If you didn't create the files yourself, you have no way of knowing which make only passing reference to the search term and which are useful. Fortunately, some natural-language systems figure this out for you and rank the files according to their relevance.

Finding Your Search Tool

Searching for a text-retrieval package can be about as complicated as searching for documents, so decide what you want to accomplish before you choose a package.

For instance, if you have an 80MB hard disk and your filing system is totally disorganized, a basic retrieval package can help you find lost files more easily. Alki Seek, Retrieve It, Gofer, and On Location are geared for this. All four packages provide the basic Boolean operators, but beyond that there's a big gap in offerings.

Retrieve It has the most basic set of search tools: Booleans and proximity searching. However, it does provide a smorgasbord of proximity searches, letting you look for words before or after other words, for example. It can pause a search in progress or search in the background.

Gofer is slightly better, letting you search for up to eight words separated by the Boolean and proximity operators and adding wild-card searches. You can search in the background with Gofer and search for near spellings. However, since Gofer doesn't run on the 68040 processor and Microlytics has no plans to update the program, avoid Gofer if you own or plan to buy a newer Mac.

Gofer and Retrieve It are outdone by Alki Seek. Seek offers more text-search criteria than you ever thought possible. Its well-designed query window won't overwhelm you, and its Banter Box describes in plain English what you're searching for. You can save and reuse your search criteria, and Seek also lets you open up a document and view it in its original format—Seek supports XTND as well as formats of major programs like Word and PageMaker. (Retrieve It and Gofer can show the text of found documents without formatting.) However, Seek can't search in the background, and it doesn't have relevance ranking.

These three packages are painfully slow for large amounts of text because they have to read through the actual files. In an informal test on a PowerBook 140, I searched for *Macintosh* AND *Centris* in roughly 377MB of text from back issues of *Macworld*. Seek took about 23 minutes, Gofer took nearly 30 minutes—and Retrieve It had the sense to quit after 20 minutes and chastise me for my search criteria.

Programs that index all the text and then search the index instead of the original documents are much faster. On Location performed the same informal test in 5½ minutes. Indexing saves searching time, but it costs hard disk space: some programs' indexes are about 1 percent of the size of the data you're indexing, but others can be 100 percent.

On Location has a nice feature—it can index in the background and update the index automatically when you modify your files. On Location's indexing outweighs the sparse set of search criteria and lack of relevance ranking and makes On Location the best basic package, though Alki Seek should be upgraded with indexing and background searching by the time you read this (see "Fast Find").

Sharing Your Knowledge Base

Text-archiving-and-retrieval tools really come into their own when your workgroup or company can share information on a Mac network. Virginia Systems Software's Sonar and Sonar Professional, MarcoPolo, GraphicKRS, and Personal Librarian make it easy to do this.

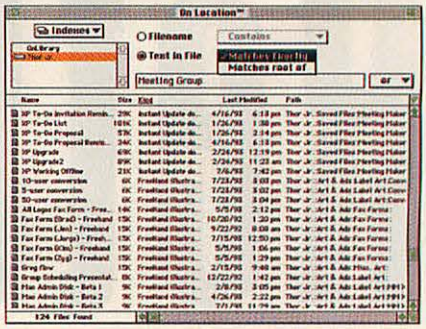
Both Sonars have the standard Boolean search operators, fuzzy and proximi-

ty searching, wild-card searching, and relevance ranking. Sonar Pro can also search phonetically—by finding words that sound like the search terms—and lets you pause in the middle of a query, conduct another search, and then resume the previous search. GraphicKRS also has this branching search capability.

GraphicKRS moves the text to be searched into a separate archive. Tools for programmers let you build a complete application around this archive—for example, you can build an interface and set up hypertext links between parts of documents. GraphicKRS also imports graphics embedded in documents into the archive. Sonar Pro has a hypertext feature but isn't programmable. Both packages record the current session's search path, so you can easily retrace your steps.

GraphicKRS has wild-card and Boolean searching, but Sonar Pro adds concept searching—a technique that is similar to natural-language searching but requires the user to define the relationships between words. Concept searching makes Sonar Pro a better retrieval tool than GraphicKRS, but Sonar Pro is outdone by Personal Librarian's natural-language query capability. Personal Librarian looks for statistical relationships between words in the documents it retrieves. For example, if you tell it to look for *baseball*, it will notice that many of those documents contain the word *umpire* and may start to turn up documents containing the word *umpire* that don't mention baseball. Personal Librarian also has fuzzy and wild-card searches, and ranks the files it finds for you.

MarcoPolo stands out from this group for several reasons. The Sonars, GraphicKRS, and Personal Librarian use System 7 file sharing to run on a network,



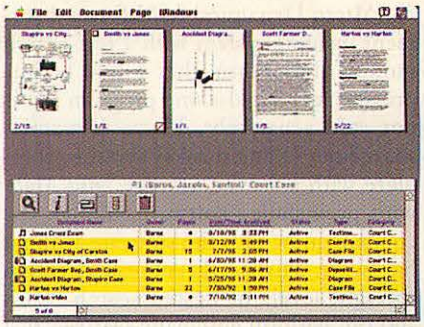
Fast Find On Location's limited search criteria make it hard to filter out files that are marginally relevant to your query, but its index does make retrieval very rapid.

and they don't track who owns documents. MarcoPolo has its own networking scheme with built-in access management and document tracking. Through a special print driver, MarcoPolo includes a

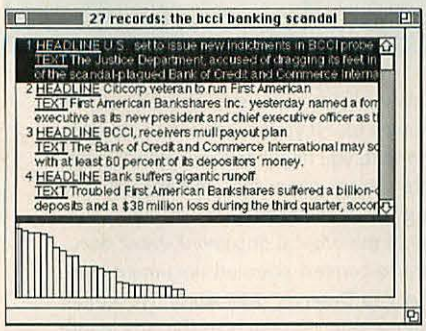
Text-Archiving Systems at a Glance

	SMALL SYSTEMS				MULTIUSER SYSTEMS		
	Alki Seek 2.1	Retrieve It 1.0	Gofer 2.0	On Location 2.0.1	Sonar Professional 8.4	MarcoPolo 2.0	GraphicKRS 1.0
General							
Company	Alki Software	Claris	Microlytics	On Technology	Virginia Systems Software	Mainstay	Knowledgeset
Phone	206/286-2600	408/727-8227	716/248-9150	617/374-1400	804/739-3200	805/484-9400	408/738-3400
Toll-free phone	800/669-9673	800/325-2747	○	800/548-8871	○	○	800/456-0469
List price	$39.95	$69	$39.95	$129	$795[A]	$395	$15,000[B]
Query Methods							
Boolean	●	●	●	●	●	●	●
Fuzzy	○	○	●	●	●	●	○
Proximity	○	●	●	○	●	○	●
Phonetic	○	○	○	○	●	○	○
Wild card	●	○	●	●	●	●	●
Pattern	●	○	○	○	○	○	○
Keyword	●	●	●	●	●	●	●
Root search	○	○	○	○	●	○	○
Natural language	○	○	○	○	○	○	○
Concept	○	○	○	○	●	●	○
Subquery	○	○	○	○	○	●	●
Save query	●	○	●	○	●	●	●
Autoquery	●	○	○	○	○	●	○
Other Features							
Automatic index and/or archive update	NA[C]	NA[C]	NA[C]	●	○	●	○
Space requirements for index/archive	NA[C]	NA[C]	NA[C]	2%–4% of original data	60%–100% of original data	1% of original data	400% of original text
Background searching	○	●	●	●	○	●	○
Relevance ranking	○	○	●	○	●	○	●
Multiuser support	System 7 file sharing	System 7 file sharing	System 7 file sharing	System 7 file sharing	System 7 file sharing	internal	System 7 file sharing, internal, Unix server
Imaging capability available	○	○	○	○	Sonar Image (separate product)	●	○

● = yes; ○ = no; NA = not applicable. [A] A $295 version, Sonar 8.4, lacks phonetic and root-search queries, and it cannot save queries. [B] Price varies with configuration and license.



MarcoPolo's Picture File MarcoPolo's special print driver archives an image of your Mac-generated files along with the text they contain, so you can see thumbnails of retrieved files while you read them.



Relevant Details Personal Librarian has ranked this group of 27 files by their relevance to the BCCI banking scandal, and the histogram-like display below shows how relevant each file is.

PICT image of documents in the database as it archives them, and it can do subqueries—that is, query the list of files found by a previous search. But MarcoPolo lacks natural-language searching and relevance ranking, and is not programmable (see "MarcoPolo's Picture File").

MarcoPolo has a nice feel and is very easy to set up, thanks to straightforward manuals. Still, the nod for these packages goes to Personal Librarian, because of its natural-language querying and relevance ranking (see "Relevant Details"). Second place goes to Sonar Professional, despite confusing manuals that make setting up the program difficult, because Sonar Pro has some great extras, such as sticky notes that you can add to documents and that become part of the index for searching as well. In my informal speed test, Sonar took a bit under three minutes, and MarcoPolo took just under four.

Serving Up Information

For very demanding situations, you need to look at client-server systems. There are three client-server systems that can be all-Mac—Optix, MARS (Microdynamics Archiving and Retrieval System), and AppleSearch. In several others the Mac's role is only as a client on a VMS, Unix, OS/2, or mainframe server.

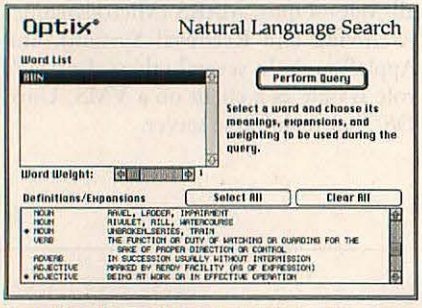
CLIENT/SERVER SYSTEMS

Personal Librarian 1.06	AppleSearch	Optix Network NLS 4.0	PixTex/EFS 3.03	SearchTools 1.2	MARS 3.0	Topic 3.1.4
Personal Library Software	Apple Computer	Blueridge Technology	Excalibur Technologies	Fulcrum Technologies	Micro Dynamics	Verity
301/990-1155	408/996-1010	703/675-3015	619/625-7900	613/238-1761	301/589-6300	415/960-7600
○	800/635-9550	○	800/788-7758	800/385-2786	○	○
$995	starts at $1799	$75,000 [B]	starts at $12,000 [B]	starts at $1000 per user [B]	starts at $70,000 [B]	starts at $30,000 [B]
●	●	●	●	●	●	●
●	○	●	●	●	●	●
●	●	●	●	●	●	●
○	○	●	●	○	○	●
●	●	●	○	●	●	●
○	○	●	●	○	○	●
●	●	●	●	●	●	●
●	●	●	○	○	○	●
●	●	●	○	○	○	○
○	○	●	●	●	●	●
○	○	●	●	●	○	●
●	●	●	○	●	○	●
○	●	○	●	○	●	●
○	●	●	●	●	●	○
60% of original data	100% of original data	2K per page	⅓ of original data	85% of original data	100% of original data	65%–70% of original data
●	●	●	○	●	●	●
●	●	●	●	●	○	●
System 7 file sharing, Unix, VMS servers	Mac OS, A/UX servers	Unix server	Unix, VMS servers	internal, Unix, OS/2 servers	Mac OS server	DOS, Unix, VMS, OS/2 servers
○	○	●	●	●	●	●

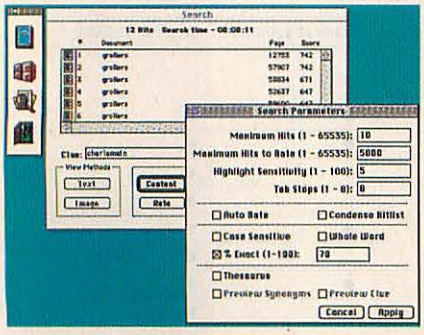
[C] *Doesn't create index or archive.*

HOW TO MANAGE PAPER DOCUMENTS

Searching text files is fine when your data is on the computer, but chances are you have a mountain of papers stored away too. If your organization needs to convert paper files to searchable computer format, you might consider a document-imaging system. A document-imaging system scans paper files and lets you add keywords to the scans to facilitate retrieving the documents later; when you conduct a search the system displays the image of the original document. Most document-imaging packages use OCR software to convert scanned documents into searchable text (see "OCR: The Recognition You Deserve," *Macworld*, November 1993). Optix Network NLS and MARS, among other products in this article, are geared toward document-imaging, but the topic requires an article to itself, so look for more coverage in an upcoming issue of *Macworld*.



Searching in English Optix's Natural Language Search lets you fine-tune how it interprets your query terms. In this example, Optix provides a list (under Definitions/Expansions) of nuances associated with the search term *RUN*.



Matching Patterns PixTex/EFS looks for strings of letters instead of entire words, so it can find *Charlemagne* even though the search term is misspelled as *charlamain*.

These systems are for large organizations with many users who need simultaneous access. For instance, a company might have a help desk that receives calls about its products and needs to track problems and make the solutions accessible to its technicians. As records of calls build up, a wealth of information accumulates in the retrieval system so that a technician can type in a description of a problem and get references to previous solutions.

AppleSearch is based on Personal Librarian's search engine, so it incorporates natural-language searching. Like Personal Librarian, AppleSearch saves queries, but it goes a step further: you can set an AppleSearch query (called a Reporter) to run automatically on a schedule—for example, to search information downloaded from the wire services once a day. Results are ranked by relevance.

Optix Network NLS can run as a single-user system but is designed for Macintosh clients on a Unix server. Optix's natural-language engine is a little different from AppleSearch's or Personal Librarian's—it uses a dictionary and a thesaurus to analyze the words in a query and draw relationships between them. You can control how sensitive Optix is to finding these relationships (see "Searching in English").

Verity's Topic, with a Mac client that can access servers on several platforms, is for people who have a good idea what they are looking for and how to ask for it. Topic uses concept searching, so you (or an expert in the subject you are investigating) must define the queries, or topics, by setting up hierarchical relationships between search words and weighting each part of the query. As you add new subjects and words to a query you can change the relationships to reflect any new emphasis you might want to underscore. Topic ranks finds in order of importance. Verity also sells a module, called Topic Real-Time, that searches real-time data feeds such as news wires.

Excalibur's PixTex/EFS runs as a Mac client on Unix and VMS servers. PixTex specializes in pattern recognition, searching at a fine resolution that ignores words and looks for letters—it compares every sequence of characters in your query against every sequence of characters in the documents. This makes phonetic and fuzzy searching unnecessary. You can even type in approximate spellings of words, and the program finds anything having similar sequences of characters and ranks them by relevance (see "Matching Patterns").

Micro Dynamics' MARS is a document imaging system with a text-search module, FreeForm, that would be impressive as a stand-alone program but is not sold separately. Micro Dynamics started out selling turnkey systems, complete with a server, storage, and Macs with preinstalled software, though the company now sells the software without hardware. MARS's FreeForm offers up to eight levels of nested search terms and can perform automatic searches that are similar to those of AppleSearch's Reporters.

Fulcrum's SearchTools is a programmable system, like GraphicKRS, that is really designed for developing in-house text-retrieval systems and searchable CD-ROMs. SearchTools adds a new wrinkle: it incorporates a version of SQL, the universal database query language, that has been extended with commands specific to text-retrieval operations. SearchTools runs as a Macintosh client on Unix or OS/2 servers (a Windows NT server is also in development).

With such a wide variety of search tools available, there is certain to be one that can help you find all the information you need. Now if someone would just hurry up and convert all those reams of microfiche into digital text. **m**

KRISTI COALE, based in Redwood City, California, wishes text-retrieval technology had been available sooner to save her from years of microfiche sickness.

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Personal Librarian Personal Librarian's statistics-based natural-language querying helps you find not only what you know to search for, but also related topics. **Company:** Personal Library Software. **List price:** $995.

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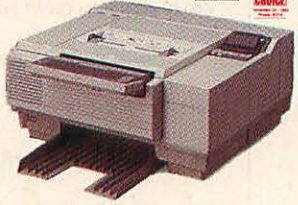

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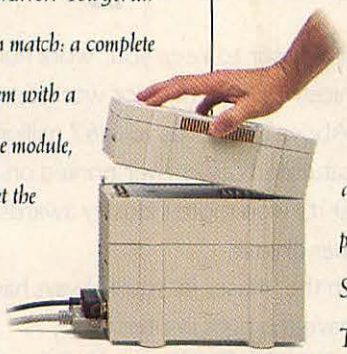

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AT WORK

BY LON POOLE

Quick Tips

Tips, Tricks, and Shortcuts

SOMETIMES WHEN YOU'RE CREATING A form or entering column headings in an Excel worksheet, you want to control line breaks yourself rather than let Excel wrap lines automatically. Although the Excel manual describes how to force a line break in chart text (⌘-return) or in a text note (option-return), Mike Aquino of Pittsburgh could find no equivalent method for forcing a line break while typing text in a worksheet cell. He devised a workaround that uses Excel's **CHAR(13)** function. For example, the formula **="Mike"&CHAR(13)&"Harry"** puts a line break between the names Mike and Harry. He also found it necessary to select the cell and use Excel's Alignment command to turn on the Wrap Text option.

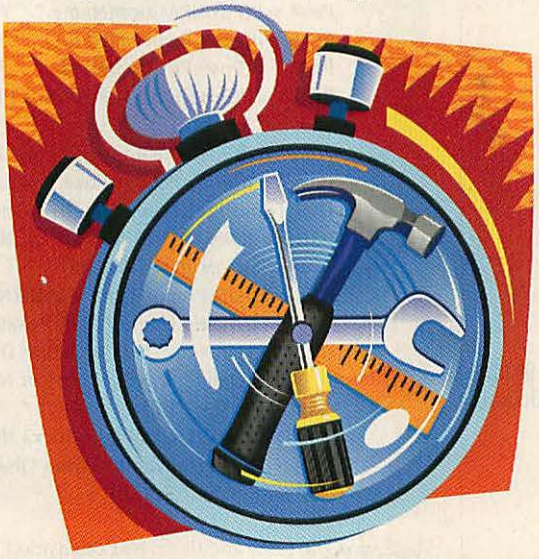
In checking out this tip, I tried several key combinations and discovered that typing ⌘-option-return or ⌘-option-enter puts a line break in the formula bar. (I later found the latter key combination obscurely listed in the Excel manual chapter "Using the Keyboard with Microsoft Excel." For example, typing *The Three*, pressing ⌘-option-return, and then typing *Stooges* would put the first two words on one line and the third word on a separate line in the formula bar—but not in the worksheet cell. The key to making the lines break on the worksheet is the second half of Mike Aquino's tip: set the cell's Wrap Text option with the Alignment command. Excel's manual describes this procedure, but it's not easy to find (hint: look up *carriage return* in the index).

GrayShare StyleWriter

Stuck with a StyleWriter and wish it had a StyleWriter II's GrayShare technology? All you need is the StyleWriter II software, a Mac with Color QuickDraw, and time. Because they lack Color QuickDraw, Macs that came with 68000 microprocessors (the Plus, SE, Classic, Portable, and PowerBook 100) can't use the StyleWriter II software to print grays.

Reinhard Geiger of Dornbirn, Austria, and other readers report success in printing shades of gray on StyleWriters connected to other Macs with the StyleWriter II software installed.

When I tried it, I had mixed results. Using TeachText 7.0, my StyleWriter produced (albeit slowly) smooth gray-scale prints of small PICT images. Printing a half-page Aldus FreeHand drawing took over four hours (printing time may vary depending on drawing complexity, your Mac model's performance, and how much you are doing in the foreground



while PrintMonitor prints in the background) and used over 11.5MB of disk space for temporary files on the start-up disk. The print was wonderful, but I'm not sure it was worth the wait. Moreover, PrintMonitor couldn't finish printing this drawing until I used the Finder's Get Info command to increase PrintMonitor's preferred memory size to 500K.

Several FreeHand documents I tried to print with StyleWriter II software needed more than the 13MB of disk space available on my start-up disk. I also found that text documents fared better than gray-scale graphics. For instance, a plain-text Microsoft Word document printed about 25 percent faster with the StyleWriter II 1.0 software than with the StyleWriter 7.2.3 software.

The problem with StyleWriter II software is acquiring it. Apple does not acknowledge that the newer software works with the older printer, and does not distribute the StyleWriter II software through the same channels as its other printer software. Some readers obtained the software nefariously, by copying it from a StyleWriter II owner. Others took 800K floppies to an Apple dealer and got copies of the four StyleWriter II installation disks there.

If you do get the StyleWriter II software, install it with the Installer program on the first installation disk. The Installer also updates the Chooser to 7.3 (3.7 if you use System 6.0.7 or 6.0.8) and other system software that may need updating depending on your Macintosh model and your system software version. The StyleWriter II software probably won't work if you merely drag the StyleWriter II icon to your System Folder.

PowerBook 165c Power

Despite what you read in September's *Quick Tips*, the PowerBook 165c has a universal, self-adjusting power supply and needs only an adapter plug to work anywhere in the world. A step-down transformer is not required for this or any other PowerBook model.

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Q. I have Call Waiting on my phone. When someone calls me while my Color Classic is connected to Compu-

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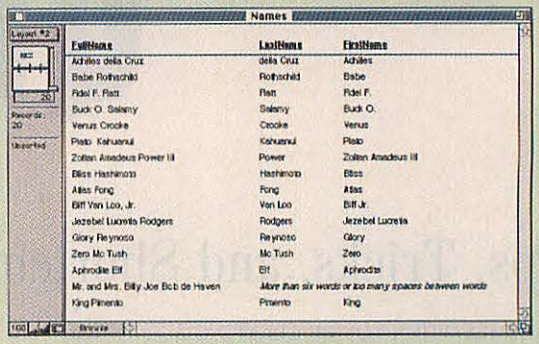
EXTRACTING NAMES

In FileMaker Pro, extracting a last name from a long full name (for example, Mr. and Mrs. Biff Van Loo, Jr.) by the usual methods leads to complicated IF statements. Alan M. Winslow of Pleasanton, California, devised the following method, which, although somewhat lengthy, is relatively easy to enter and modify. His method handles a full name containing from one to six words with no more than double spaces between them. It recognizes two-word last names such as Van Loo and suffixes such as Jr.



You must define the following 16 calculation fields with the names and formulas listed below. These fields are needed only temporarily, so you may not want FileMaker Pro to add them automatically to the current layout. Before defining them, either create a new layout or use the Preferences command to clear the option "Add newly defined fields to current layout." Set the fields whose names begin with Pos, Is, and Len to have number results, and set the rest to have text results. Where you see *FullName* in the first field-definition formula, substitute the name of the field in your database that contains the full name you want to split up.

```
<*Name = Trim (FullName)
Pos1 = Position(Name," ",1)
Pos2 = Position(Name," ",Pos1+1)
Pos3 = if(Pos2,Position(Name," ",Pos2+2),0)
Pos4 = if(Pos3,Position(Name," ",Pos3+2),0)
Pos5 = if(Pos4,Position(Name," ",Pos4+2),0)
Pos6 = if(Pos5,Position(Name," ",Pos5+2),0)
Posx0 = if(Pos5,Pos5,if(Pos4,Pos4,if(Pos3,Pos3,if(Pos2,Pos2,if
   (Pos1,Pos1,0)))))
Posx1 = if(Pos5,Pos4,if(Pos4,Pos3,if(Pos3,Pos2,if(Pos2,Pos1,0))))
Posx2 = if(Pos5,Pos3,if(Pos4,Pos2,if(Pos3,Pos1,0)))
JR = Trim(Right(Name,Length(Name)-Posx0))
IsJR  = if(JR="Jr." or JR="Jr" or JR="II" or JR="III" or JR="IV" or
   JR="Sr." or JR="Sr",1,0)
NTL = if(IsJR,Proper(Trim(Middle(Name,Posx2,Posx1-Posx2))),Proper
   (Trim(Middle(Name,Posx1,Posx0-Posx1))))
IsTWLN = if(NTL="De" or NTL="Da" or NTL="Di" or NTL="Del" or
   NTL="Della" or NTL="Mc" or NTL="Van" or NTL="Von" or NTL="La"
   or NTL="Le",1,0)
Posx = if(IsTWLN and IsJR,Posx2,if(IsTWLN or IsJR,Posx1,Posx0))
LenLN = (Length(Name)-Posx+1)IsJR*(Length(JR)+1+if(Middle(Name,
   PosX0-1,1)=",",1,0))*>
```

The three additional text calculation fields listed below extract the last name(s) and first name(s), or produce an error message. When you finish defining all 19 calculation fields and click the Done button in the dialog box of the Define Fields command, FileMaker Pro performs the calculations to split all names in your database.

```
<*LastName = if(Pos6," ",Trim(Middle(Name,Posx,LenLN)))
FirstName = if(Pos6," ",Left(Name,Posx-1)&if(IsJR," "&JR,""))
Error = if(Pos6,"More than six words or too many spaces between
   words"," ")*>
```

After splitting all the full names using these calculation fields, you can change the type of the LastName and FirstName fields from calculation to text, and then delete all the other fields.

continues

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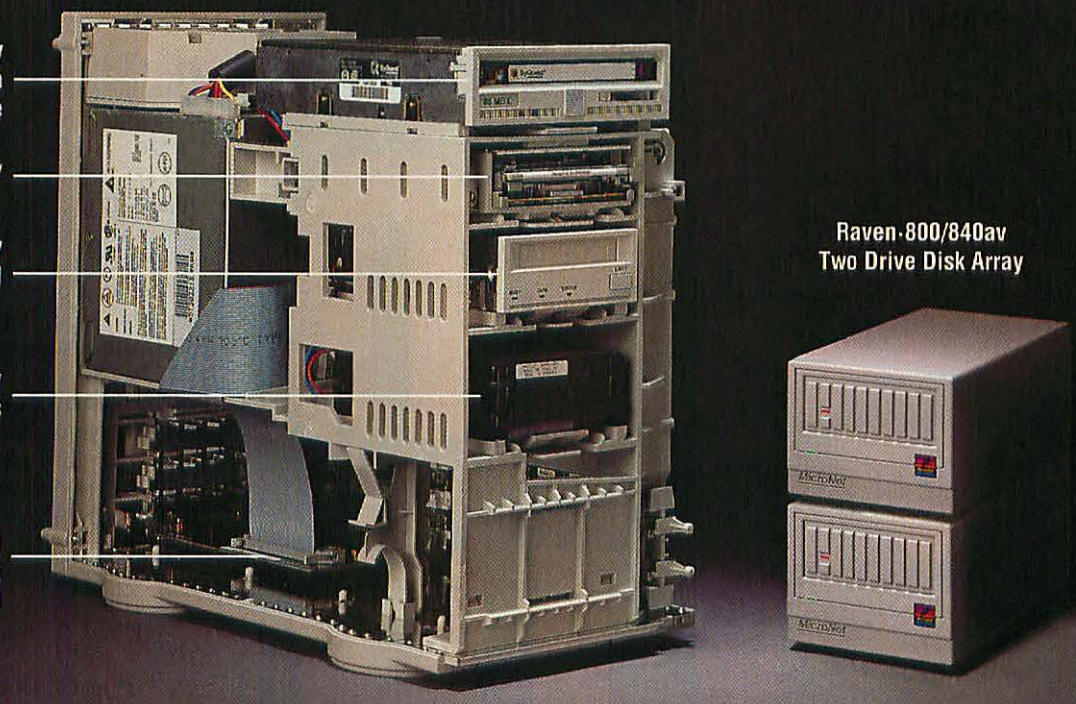

MicroNet's Raven·800. Disk Array Power For The Quadra 800/840av.

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Disk arrays can improve performance up to 400 percent over standard drives. Combine MicroNet's Raven·800 disk array with the speed of the Quadra 800/840av and you have an unbeatable system for audio recording, full rate digital video, and graphics applications such as PhotoShop.

Cost effective two drive disk arrays are available in capacities of 1030 to 5560 MBytes and are expandable to more than 38 GBytes. MicroNet offers Raven upgrade kits for existing MicroNet or factory installed Apple 500 or 1000 MByte drives.

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MicroNet offers a family of internal data storage systems for the Quadra 800/840av. Included are SyQuest removable systems, rewritable optical drives, and DAT backup systems. We back you with our 24-hour tech support and Over-Night-Exchange service.

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Display Close 11/22/93

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Serve, the Mac gets disconnected. How can I stop this from happening?

Sean A. Savage
New York, New York

A. You can turn off Call Waiting by prefixing the phone number your modem calls with this code:

***70,**

For example, the dialing string ***70,555-1212** turns off Call Waiting, pauses two seconds for a second dial tone, and dials 555-1212. Call Waiting stays off for the duration of the call and is automatically restored when the call ends. For pulse dialing, substitute **1170** for ***70**.

Footnotes by Section

Q. I have divided a 160-page document into 16 sections. Using Microsoft Word 5.1a, can I place the footnotes directly below the last line of text on the page and restart footnote numbering with one in each section?

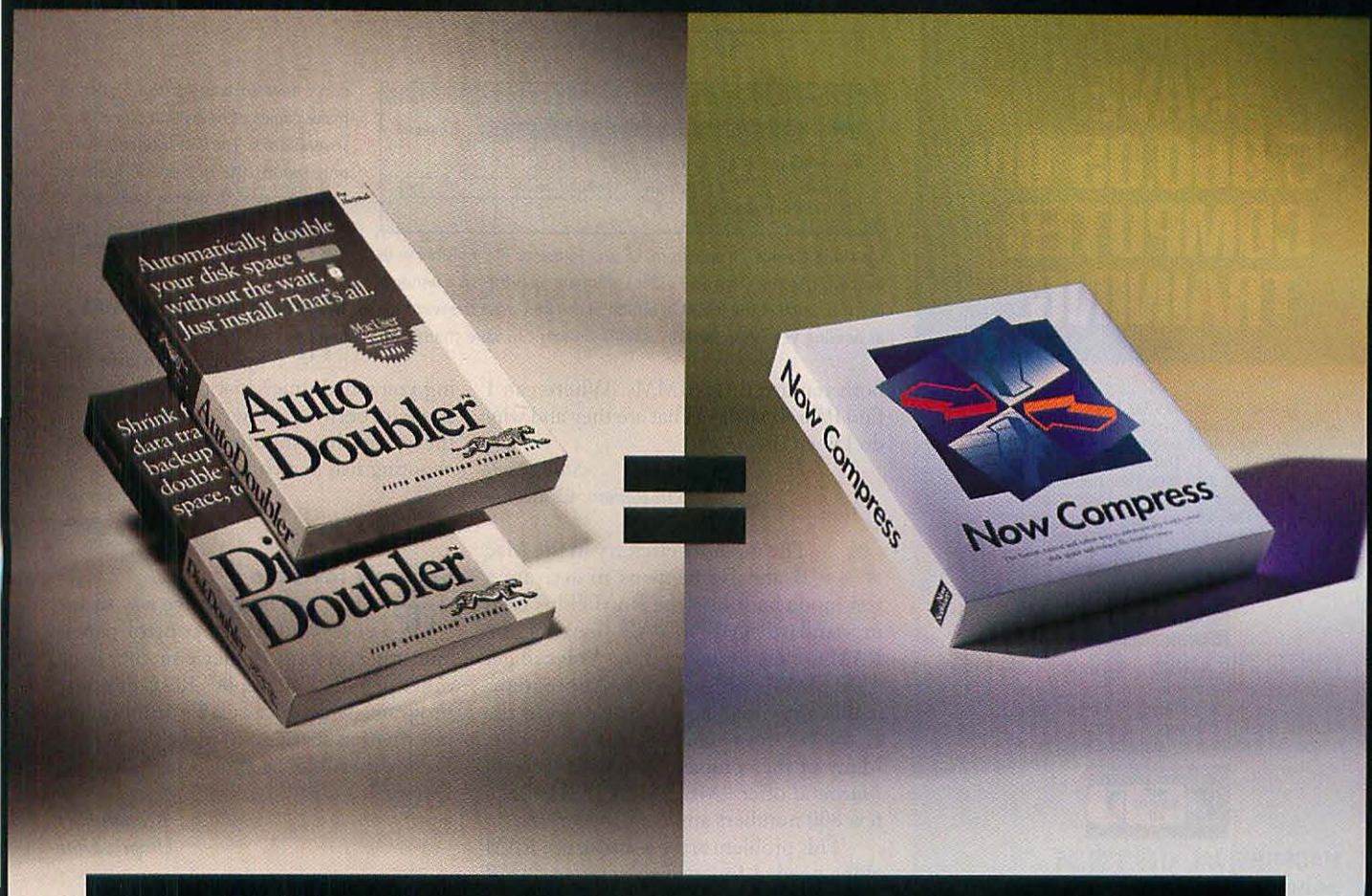
Bill Hutchinson
Harrow, Ontario, Canada

A. Word's Documents command, which controls footnote placement and numbering, does not offer the options you want. You can work around this limitation by putting each section in a separate file and connecting the files in a series with the File Series option of the Documents command (as described in the Word manual's chapter on setting up long documents). You can have Word number pages consecutively throughout the compound document, or not, and Word can compile an index and a table of contents as though the series of files were one. In contrast, Word's commands for finding, replacing, formatting, and spelling do not span multiple files. To minimize tediously repeating these actions, hold off splitting a document into multiple files until you have finalized content and format. (Don't go to the opposite extreme and try to work with a humongous file; that will only bog down Word.) When all sections are ready to print, cut and paste them into separate files and connect the files in a series. Note that Word always starts printing each file in the series (that is, each of your sections) on a new page, so this method won't do if you want sections to be able to change midpage.

Mac II and IIx PALs

Q. When I tried to upgrade the RAM in my Mac IIx, I discovered that standard 4MB SIMMs wouldn't work. According to the system and memory upgrade chart in "Upgrading Your Mac," *Macworld*, June 1993, a Mac II and a IIx

continues



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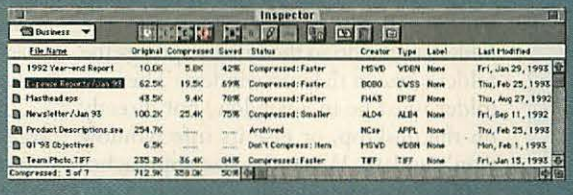

What's more, it decompresses so quickly you won't notice when you're working with compressed data.

In the Now Software tradition, we've humanized the interface to make it far simpler to use than other compression products.

Note the Inspector window on the left. It lets you see the status of any file, folder or disk, and perform any compression operation with a click of your mouse. Now Compress. It's the fastest, safest, most useful compression package you can get.

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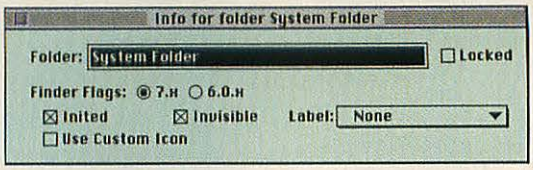

Cloaking Device You can make any folder or file invisible with ResEdit. Use the Get File/Folder command to bring up a window like this, and set the Invisible option in it. Then close the window, answering yes when ResEdit asks if you want to save changes.

both require PAL SIMMs. Where can I find PAL SIMMs? What are they and why do I need them?

Stan Deeds
San Ramon, California

A. The memory circuitry in the Mac II and IIx happens to activate a test mode built into the RAM chips used in standard 4MB SIMMs, making the RAM useless for computing. You can get 4MB SIMMs with special PAL (programmable array logic) chips that prevent the II and IIx from activating the test mode. Many of the companies that advertise in *Macworld* offer 4MB PAL SIMMs; dial a few 800 numbers and compare prices.

This problem arose because the RAM chips needed for making standard 4MB SIMMs didn't exist when Apple designed the II and IIx to use high-capacity SIMMs. Apple didn't anticipate that the RAM chip makers would include the test mode, which hadn't been in the previous generation of RAM chips. Later Mac models have no problem with the test mode and do not require PAL SIMMs.

Copy Fitting

TIP Instead of haphazardly copying batches of files from your hard drive to floppies and doing heavy mental addition to avoid having the Finder bark "There is not enough room on the disk," do what I do. Create a new folder on the hard drive and use the Finder's Get Info command to bring up the folder's info window. Begin dragging files into the folder; as you do so the Finder updates the folder's size in the info window. The new folder must be in a window, not directly on the desktop, or else its info window won't update. When the size approaches 1400K for a high-density floppy or 800K for a double-density floppy, you know you've got just enough to fill the disk.

Joshua Rafofsky
Los Angeles, California

Here's another approach, suggested by Ernie Malaga of Oceanside, California. If the Trash is empty, you can collect items in it instead of a specially created folder. This method has two advantages: You can quickly return all items to their original places with the Put Away command in the File menu, and you don't have to wait for the Finder to make copies of items that come from several disks. The Get Info command only reports the size of the Trash to the nearest K, however, whereas it gives you the exact number of bytes in a folder.—L.P.

Slicers Hate Cybermud

TIP Are the new slicers in Spectre Supreme giving you a bad time? Just park yourself in some cybermud. They can't hurt you there, and then shooting them is just like shooting fish in a barrel.

Roland E. Miller III
Laramie, Wyoming

Securely Invisible

TIP Here's an inexpensive way to secure your Mac's control panels and other System Folder contents from other people. Use Apple's ResEdit utility program (which is available from online information services) to make the System Folder invisible, as shown in "Cloaking Device."

Keanan Farr
Hooper, Utah

Make sure you also remove obvious aliases for folders inside the System Folder, such as the Control Panels alias in the Apple Menu Items folder. After opening the Control Panels folder, anyone can access the System Folder (visible or not) by pressing ⌘ while clicking the title of the Control Panels window. If you want to permit access to some control panels such as Keyboard, Mouse, and Easy Access so other people can adjust the Mac for their needs, put aliases of those individual control panels into the Apple Menu Items folder.

ResEdit is also available from user groups, from APDA (800/282-2732 U.S., 800/637-0029 Canada, 716/871-6555 other countries), and with the book *ResEdit All Night Diner,* by Dave Ciskowski (Hayden Books, 800/429-5331). Other utilities, such as Norton Utilities for Macintosh (available commercially) and Blindfold by Robert Gibson (shareware that's available from user groups and online services), can also make folders and files invisible.—L.P.

We pay from $25 to $100 for tips published here. Send questions or tips on how to use Mac computers, peripherals, or software (by mail or electronically) to *Quick Tips,* Lon Poole, at the address listed in *How to Contact Macworld* at the front of the magazine (include your address and phone number). All published submissions become the property of *Macworld.* Due to the high volume of mail received, we're unable to provide personal responses. m

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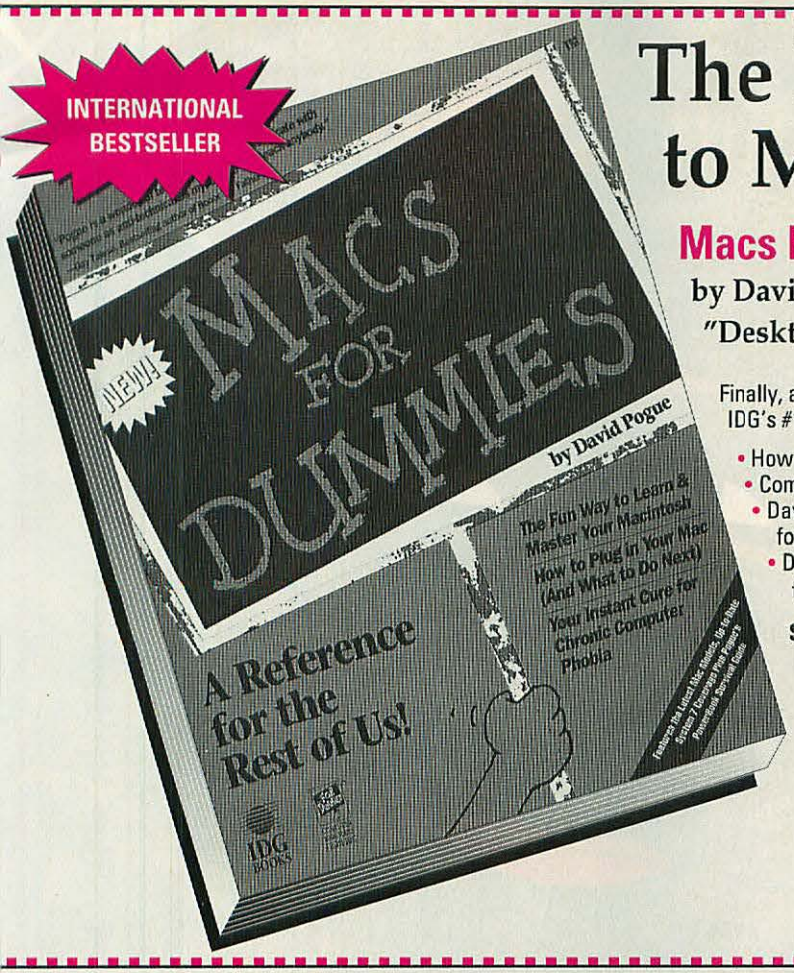
LON POOLE answers readers' questions and selects reader-submitted tips for this monthly column. His latest book is *Macworld Guide to System 7.1* (IDG Books Worldwide, 1992).



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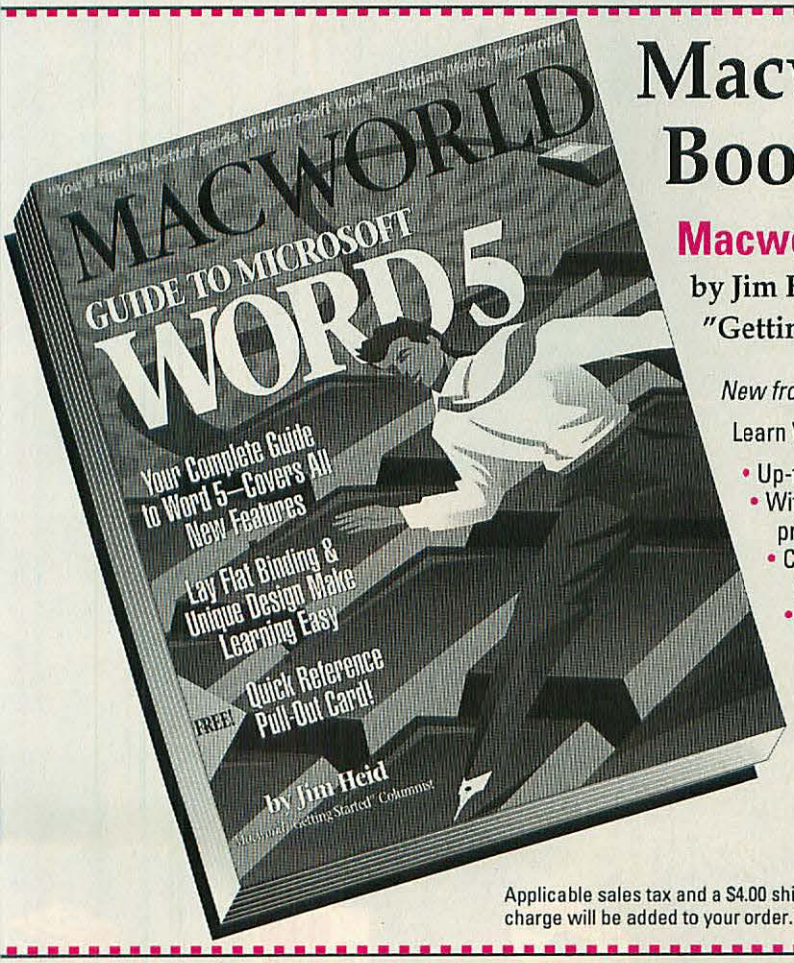

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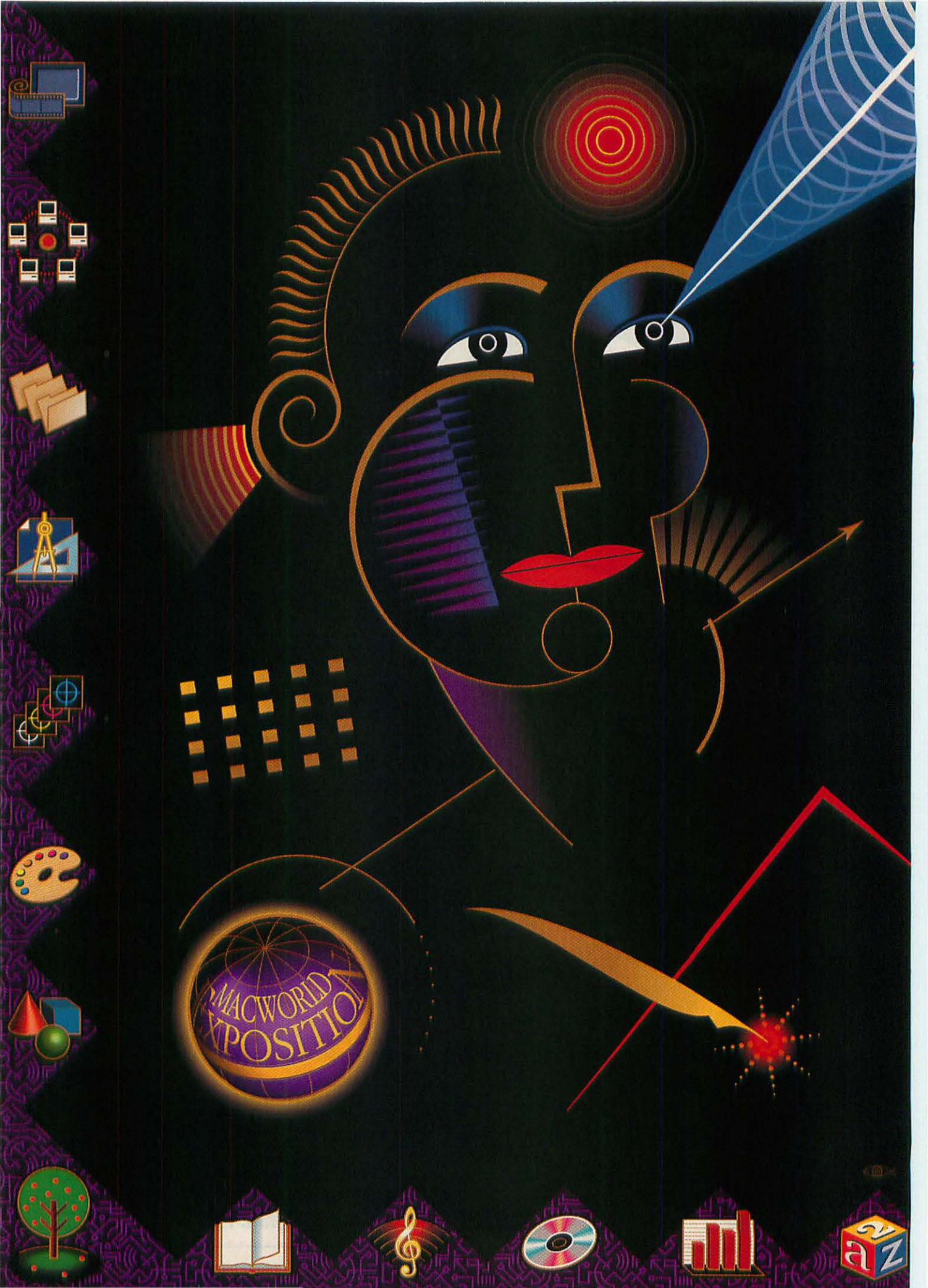
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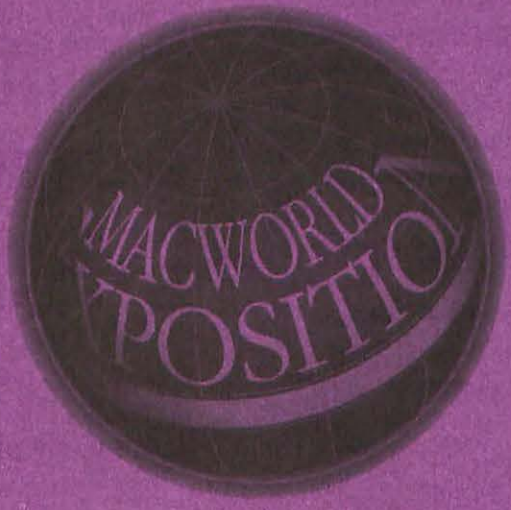
DECISIONS ARE EASIER  ONCE

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A CLEAR VIEW OF TOMORROW

The Conference Program

As your computer capabilities grow stronger, more powerful, and more sophisticated, your Macintosh is rising to the occasion. But you need to know more. You need to get an overview of what Mac technology can do today, and you need to know how you can slash costs, increase productivity, maximize your efforts, and even have fun in the process. You also need to know what the future will be for Macintosh computing. What's new and exciting in Macintosh technology? What's in store for tomorrow? What new directions is Apple taking and how will you be affected?

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2. The Entertainment Conference. Top industry designers, post-production houses, directors, producers, animators, and other leading-edge users discuss the Mac's use in television, film and commercial applications. Featured here will be: professional video, digital audio, broadcast-quality graphics, animation, virtual reality, digital video effects, music, sound, and more.

3. Apple's New Horizons Conference. From consumer electronics products (such as the Newton MessagePad) to breathtaking sources of expanded computer power (such as the PowerPC and the multimedia Macs), Apple is blazing new trails that will have far-reaching implications. These sessions will explore significant new industry trends that will have the biggest impact on Apple's customers.

4. The Enterprise Computing Conference. Providing the right information, to the right person, at the right time, to make the best decision. Enterprise-wide information delivery. Client/server problems and opportunities. Thorny Mac/IS issues. Downsizing/rightsizing. Open systems. New communications tools and technologies.

5. The Connectivity Conference. Insights on what lies ahead in Macintosh connectivity, plus hard-hitting how-to's on surviving and prospering with what's here and now. Includes: moving info between multiple platforms; connecting users in remote locations; essential network management tools; TCP/IP; AOCE; Mac/PC integration on a LAN; and more.

6. The Home Office/Small Business Conference. How to reduce the chaos and maximize your efforts in a Mac home/small business, along with a look at hardware and software especially designed to save you time and money, low-cost and no-cost programs and procedures, users' favorite utilities and shortcuts, and disaster-avoidance strategies.

7. The Science/Technology Conference. The Mac as a critical research tool, in scientific applications, management of technical data, the future of CADD, visualization techniques using QuickTime, telerobotics, and other outstanding applications of the Macintosh in laboratory and scientific settings.

8. The How-to-Get-Started Conference. Complete guidelines for those who are brand-new to the Mac, or need a concentrated lesson on popular Mac applications, including desktop publishing, databases, accounting, HyperCard, telecommunications, programming, design, multimedia, and QuickTime (to name but a few).

9. The Education Conference. Both new and classic examples of the Mac as an incomparable teaching tool – in elementary education; in secondary education; and at the university level. Included will be: multimedia, desktop publishing, CD-ROM, HyperCard, networking, QuickTime, BBSs, Internet — plus educator success stories with the Mac in math, science, language arts, and social studies.

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12. Application Workshops. Intensive training sessions, by the award-winning staff of MacAcademy, on such popular applications as: Claris FileMaker Pro; Microsoft Word; Aldus PageMaker; Microsoft Excel.

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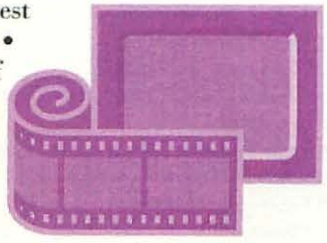

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34.☐ 50-99
35.☐ 100-499
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37.☐ 1,000 & over

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39.☐ Mac Performa Series
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41.☐ Mac PowerBook-series, Duo-series
42.☐ IBM PC (or compatible)
43.☐ None
44.☐ Other _____

Which hotel are you staying at?
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EDITED BY ELIZABETH DOUGHERTY

Networks

THE LATEST IN CONNECTIVITY AND COMMUNICATIONS

The Great (Little) Communicator

WHAT MAKES A NEWTON MessagePad more than a AA-battery-powered steno pad? Its communications capabilities. It comes equipped with an online service account and accepts a card that turns it into an enhanced pager. And a cellular link, coupled with a fax modem, can make the Newton a hand-held telephone/answering machine/fax machine.

The Messaging Card, a PCMCIA-based paging device developed by Motorola and marketed by Apple (408/996-1010), makes the MessagePad a pager. The card receives messages even when it's not in the Newton; you slip it back in to read the messages. And if the sender has a MessagePad or other suitable device, the pager card can save up to 240 characters per message. The price of the Messaging Card had not been announced at press time. Per-message pricing will be set by regional paging services, such as SkyTel.

All MessagePads come with an account for the Newton-specific Apple Online Services (AOS) communications network. For $10 to $30 monthly, users who have a modem can send and receive E-mail, including sketches, text, calendar information, and electronic business cards. Via AOS, users can also forward text-only mail to AppleLink addresses, commercial services like CompuServe and GEnie, and Internet.

Other companies will offer the MessagePad specialized information via modem. By year's end Strategic Mapping (408/970-9600), one of the first companies to cater to the traveling-salesperson crowd, plans to ship GeoAssist, which will let Newtons dial up to find business names, addresses, and phone numbers by locale or keyword, such as zip code, area code, or business type. The general version, whose price was not certain at press time, is expected to be available by the end of 1993; vertical-market editions for different industries will follow.

SCOTT PETERSON

Communications applications for the Newton MessagePad make it more than a finicky steno pad. Here, the Messaging Card turns the Newton into a pager that can receive messages of up to 240 characters—verbose compared with the usual pager messages. The card can store 120K worth of messages at a time.

Eventually MessagePad users will be able to access their E-mail accounts back at the office. CE Software (512/221-1801) has announced that it's working on QuickAccess, which will let MessagePad users exchange mail on QuickMail, NetWare MHS, and Apple AOCE Mailer E-mail transports. The company didn't say when QuickAccess would be available, nor what it would cost.

Even more intriguing is what's in the Newton's telephony future. Apple and Bell South are working on a mutual wireless communications project, expected to debut in mid-1994. "We are testing a screen-based telephony solution, and [Bell South] offers a host of applicable services, like voice mail and caller ID," said Apple PR specialist Tricia Chan. "There's a lot happening in the cellular and wireless world, but we're waiting to see standards established. Otherwise, the Newton could accommodate a cellular link today," she noted. A Swiss company, CTM Development (41 22 734 4747; or AppleLink CTM.DEV), will provide some similar services through touch-tone phones and its VoiceAccess software, which was slated to ship in September. VoiceAccess ($149) supports personalized calling services, caller ID, and remote message retrieval, with captured voice mail played back via the Newton's built-in speaker.—MITZI WALTZ

RICHARD RETHEMEYER

New dial-up routers for the Mac automatically telephone to set up the remote link for a WAN whenever the traffic requires it. Shown here are Compatible Systems' Micro.Router 1000R (top) and the Pipeline 400, one of Ascend Communications' family of three (bottom).

Two Routers for Remote LANs

FOR SMALL COMPANIES OR BRANCH offices trying to cut down on network telephone line charges, dial-up routers could be the answer. Dial-up routers let users connect LANs over the wide area using switched services instead of costly private lines.

Two companies have announced plans to ship, in the first quarter of 1994, dial-up Ethernet routers that include support for AppleTalk networks. These routers work without user intervention, automatically dialing up a telephone connection when data from a LAN workstation is ready to be sent over the WAN.

Ascend Communications (510/769-6001) announced a family of three routers called Pipeline. The Pipeline 100, which lists for $3300, is designed for small remote offices, will come with wide-area network connections, and work with switched 56 and ISDN BRI services. The $5000 Pipeline 400, for small central sites or remote sites with multiport connectivity requirements, will support switched 56, ISDN BRI, T1, E1, and PRI services, as well as 32 WAN connections. At $11,000, the Pipeline 1600 is an expandable, high-bandwidth system-level unit designed for central sites with a large concentration of dial-up needs and multimedia requirements. All three units, which also work with leased lines, will support TCP/IP, IPX, and AppleTalk protocols.

Compatible Systems (303/444-9532), best known for its line of AppleTalk routers, is making its debut in the dial-up wide-area router market with Micro.Router 1000R, which will list for about $1500. It will support switched 56, ISDN BRI, and leased-line services. It has just one WAN connection and will offer routing for TCP/IP, IPX, AppleTalk, and DECnet protocols.—MARTHA STRIZICH

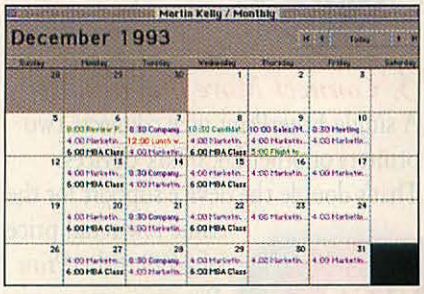
Software Juggles Phone Lines

JUGGLING E-MAIL MESSAGES, BULletin board calls, and faxes when you have just one phone line and a single serial port can be a frustrating experience. To help users handle the balancing act, a small group of Russian engineers have developed a $79 communications utility called LineShare.

LineShare, from Stalker Software, sets itself up as an intermediary between the modem and the communications software, so that any number of communications applications can share the same Macintosh serial port for both outgoing and incoming calls. The utility works by partitioning a single serial port into several virtual ports, registering them with the Apple Communications Toolbox, and then assigning a virtual port to each communications application. Incoming calls automatically go to the correct program, outgoing calls to a modem.

LineShare, which is available now, works with all programs that run the Communications Toolbox, including AppleTalk Remote Access. LineShare supports all Hayes-compatible and Fax Class 2 modems.

The program is available in the United States from Global Way, 408/866-4722.—MARTHA STRIZICH



Meeting Maker XP shows color-coded schedules for Windows PCs and Macs connected to the same network. You drag items to reschedule and click to enter new events on the calendar.

A Meeting of Windows and Mac Minds

PEOPLE WHOSE WORKGROUPS USE networked schedule-management software know how it can save meeting organizers' time and improve attendance at the conference table. Now, On Technology's Meeting Maker XP can coordinate meeting schedules for all coworkers in a group, whether they use Macs or Windows PCs.

With Meeting Maker XP, administrators publish their schedules to the server, or authorize a proxy, such as a secretary, to handle their calendars. Users can call up meeting times with a keystroke; individual users can also set reminders and keep personal schedules. File-synchronization capabilities are included for PowerBook toters.

Meeting Maker XP is priced at $790 for a 10-user pack and $3750 for 50 users. On Technology, 617/876-0900.—MITZI WALTZ

IN BRIEF

■ **Know Your Rights, Electronically** Syracuse University is sponsoring an experimental Internet service designed to improve the dissemination of government information. The Electronic Government Information Service (EGIS) recently added the first-ever electronically distributed Congressional report to its downloadable collection. *A Citizen's Guide on Using the Freedom of Information Act and the Privacy Act of 1974 to Request Government Records*, one of the most oft-ordered titles from the Government Printing Office, is now available via Gopher or Telnet. 315/443-3640.

■ **Eudora Goes Commercial** One of the most popular shareware E-mail programs now comes in a commercial version. Eudora By Qualcomm, which runs over Internet (and other TCP/IP networks), includes new functions and toll-free support not available through the shareware version. The University of Illinois will continue to develop its shareware version of Eudora and make it available through online services and Internet. Qualcomm, 619/587-1121.

■ **Com Toolbox Tweaks** A new version of TCP/Connect II ($195 to $495) lets users get new file-transfer methods through the Apple Communications Toolbox. The mail, file-transfer, and TCP/IP network access software also offers keyboard mapping and support of IBM graphics hosts with IBM 3179g emulation. InterCon Systems Corporation, 703/709-5500.

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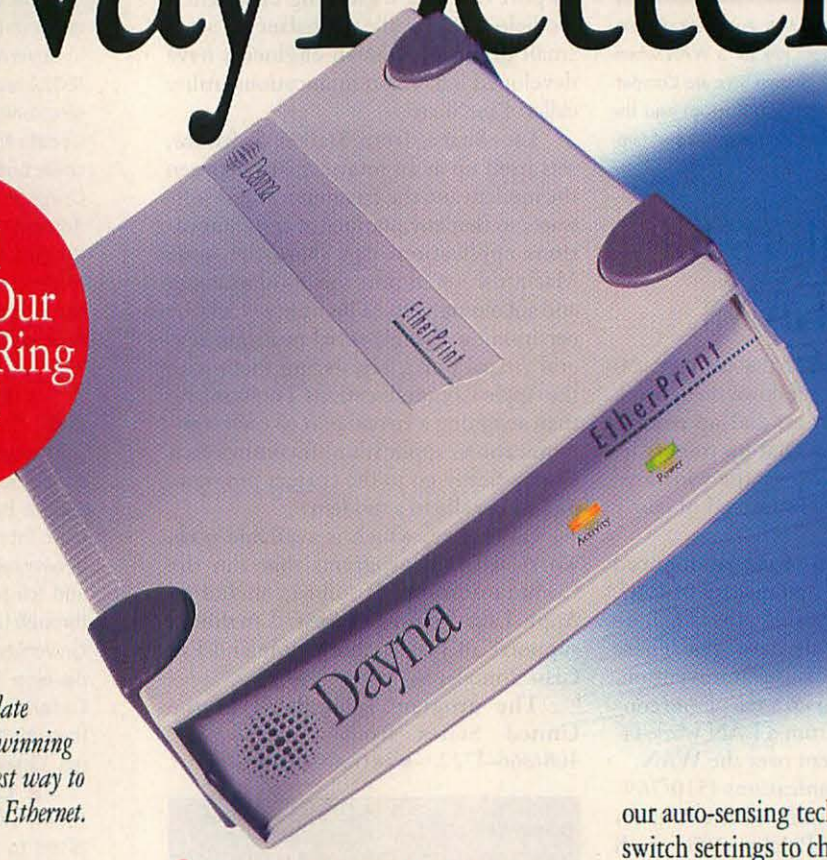

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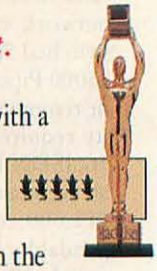

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Circle 161 on reader service card

HOW TO SHARE FILES WITH WINDOWS PCS

CROSS-PLATFORM FILE TRANSFER

Used to be that Mac users were Mac users and PC users were PC users and never the twain did meet. Then came Windows.

Now that most major Macintosh applications are available for Windows, people can work together regardless of which desktop computer they favor (see "Working in Two Worlds," this issue). Yet even a cross-platform program, such as Microsoft Word or Aldus PageMaker, does you no good if you can't move files from your Mac to someone else's Windows PC.

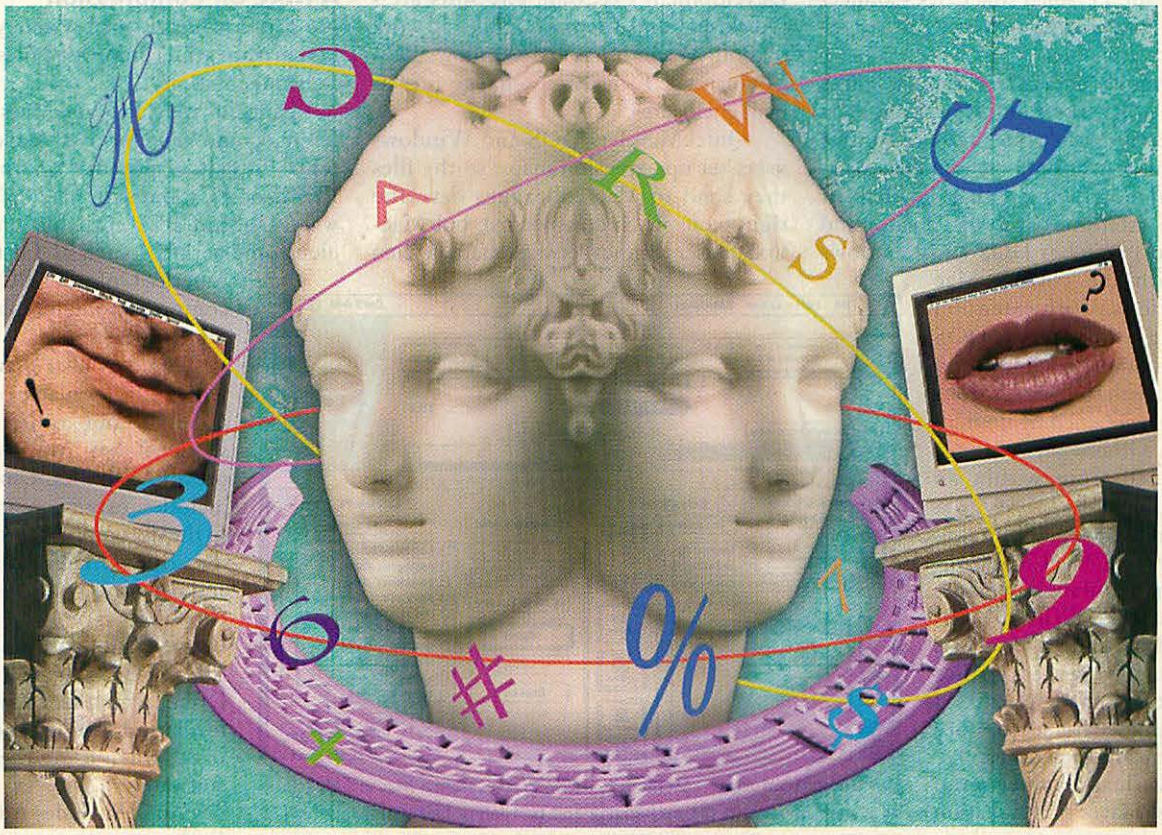
Fortunately, there are several techniques for spanning the platform gap. From networks to electronic mail to floppy disks and high-capacity cartridges, each method has its own set of strengths and weaknesses.

Over a Network

Whether you use Novell's NetWare, Apple's AppleShare, or something else as your networking software, you can transfer files between Macintoshes and DOS and Windows PCs. The technique depends on the network, but it usually comes down to one of two options: you mount a network volume and access files through your program's Open command, or you move files from a network volume to your computer, either by using a file-transfer utility or by dragging the file to your desktop.

Under AppleShare and System 7's personal file sharing, DOS and Windows PCs can't act as servers. So, while PC users on an AppleTalk network can access a Mac as simply another hard drive, Mac users can't access the PCs through the Chooser.

Farallon Computing's Timbuktu (510/814-5000) partially solves this problem. The AppleTalk-based software includes PhoneNet PC, software that connects PCs to LocalTalk or Ethernet networks using Apple's protocols. Timbuktu lets both Macs and PCs browse one another's folders and



DAVID KAHL

BY GALEN GRUMAN

files and easily transfer files between platforms without using the Chooser or mounting an AppleShare volume. You can also share printers or view and control another user's screen (Windows or Mac) from either type of computer (see *Reviews*, *Macworld*, March 1993).

However, Timbuktu does not solve the basic AppleShare and System 7 personal file-sharing limitation that keeps servers from accessing client volumes directly. Plus, only one computer at a time can connect to another. Software for one user costs $199; multiuser packs are also available. The Timbuktu for Windows PhoneNet Kit, which includes a LocalTalk network card for PCs, costs $379 for standard ISA bus PCs and $439 for MicroChannel Architecture (MCA) bus PCs, such as IBM's PS/2. You can also run Timbuktu over Ethernet with a separately purchased card.

A Windows-based product, Miramar Systems' Personal MacLAN Connect (805/966-2432), takes the opposite tack. It makes the Windows PC the server, letting the PC appear on the Mac's desktop so that you can access PC files directly from a Mac application's Open command. Many Macs can use the Windows server simultaneously, although the more users, the slower the response time. Unfortunately, it can't be set to launch the server on start-up. Personal MacLAN Connect is $199 for a single server; multiserver packs are available.

Personal MacLAN Connect shares files in much the same way Timbuktu does, but it doesn't offer remote control or screen-sharing options. Editable extension mapping (along with a detailed list of DOS extensions and Mac creator and file types) matches DOS and Windows files with the correct Mac applications. With extension mapping, transferred DOS and Windows files appear on the Mac with the correct icons and can be opened by double-clicking. Otherwise, they must be opened from within an application.

When paired, Timbuktu and Personal MacLAN Connect can simulate a peer-to-peer network. With a Windows PC and a Mac as simultaneous servers, other computers can be clients of either one. The servers are also clients of each other.

This dual-product setup does add a layer of installation and administrative complexity, as well as memory overhead for the server (which is a big deal given the memory constraints of DOS). It took me a couple of hours to figure out how to configure my system to run both. An advantage to the dual-server approach, however, is that if one server goes down, you still have another server working.

Another product, Coactive Computing Corporation's Coactive Connector for Macintosh (415/802-1080), offers a more limited transfer capability. The Windows-based hardware-software combination essentially emulates AppleShare on a PC. The control box (about $165) plugs into a PC's parallel port and has its own control firmware on board, which frees up precious memory. A $29 adapter box (with no control circuitry, since it uses the Mac's built-in networking functions) plugs into a Mac's serial port.

PCs on a Coactive network divide their files into two folders, shared and private. (Unlike the Mac's own file sharing, with PCs on a Coactive network you can't simply designate which folders and drives can be shared.) When selected through the Chooser, the shared PC folder appears on the desktop of a Mac on the network. (Macs can only be clients; Windows PCs can be either clients or servers.)

Sharing by E-Mail

The major mail applications—Lotus Development's cc:Mail, CE Software's QuickMail, and Microsoft Mail—all work on both Macintoshes and Windows PCs. You can use E-mail to exchange files as mail enclosures.

QuickMail lets DOS and Windows users set up extension maps, so the files they send to Mac colleagues have the right icons when downloaded; but Macintosh users cannot set such maps. When someone on a Mac sends a file to a PC, QuickMail converts the Mac file name to the shorter DOS format.

cc:Mail doesn't automate file renaming when you move files from Mac to PC, but it does perform extension mapping when you move files from PC to Mac. You also have the option of launching a file within a cc:Mail window (if you have a Mac program, like Excel or Word, that can read its DOS and Windows counterparts' file formats). Or, you can drag a file to the desktop or translate it to a Mac format (such as from Lotus 1-2-3 to Excel) via Claris Corporation's XTND software, which is bundled with cc:Mail. cc:Mail also lets you edit the extension maps so that you can update them as programs are revised or as you add new software.

Since Lotus Notes uses cc:Mail for its cross-platform E-mail function (see *Reviews*, *Macworld*, September 1993), file exchange between Mac and Windows Notes users works the same as for any cc:Mail system.

Like cc:Mail and QuickMail, Microsoft Mail offers automatic extension mapping. Both PC and Mac versions of Microsoft Mail come configured with maps for Microsoft's applications, but the mail administrator can add maps for any other Mac programs.

A Note on Compression

No matter which E-mail system you use, it's smart to send compressed files to save transmission time.

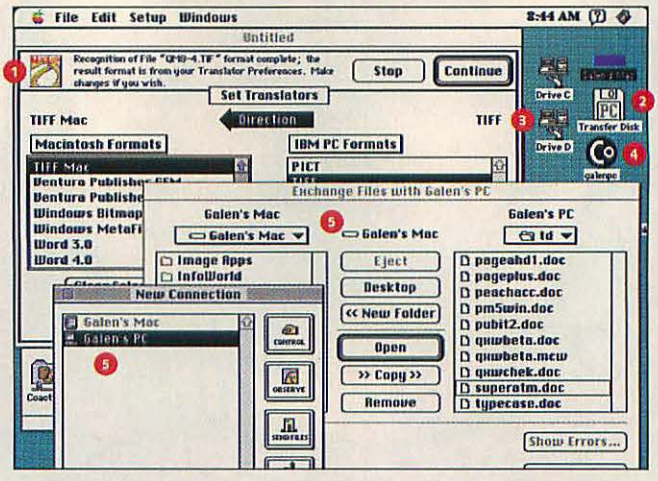
Unfortunately, PCs and Macs use different compression formats: Aladdin Systems' StuffIt is popular on the Mac, PKZip on PCs. But with Aladdin's shareware UnStuff/PC (available on major electronic services such as GEnie and America Online), a PC can decompress nonencrypted Mac StuffIt files.

Peter Maika's freeware Unzip 2.01 (available on CompuServe and other online services) lets Macs decompress PKZip files. Unzip even includes extension mapping so the decompressed files have the right Macintosh icons and resources.

Using Disks to Swap Files

All new Macs have a SuperDrive, which can read DOS formatted 1.4MB and 720K disks, when using the proper software.

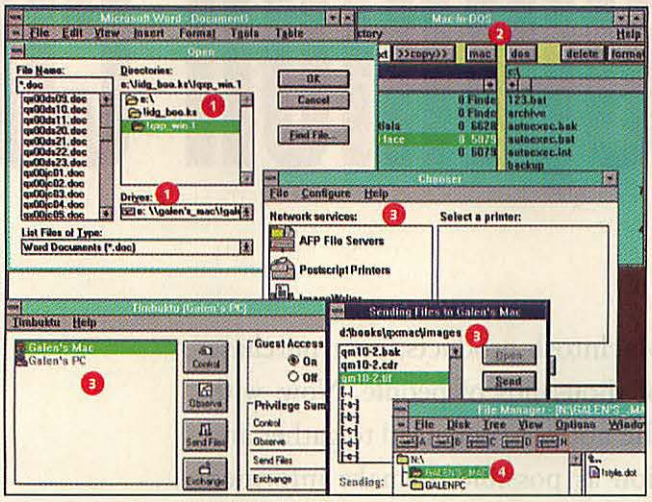
Apple includes Apple File Exchange with System 7, but it's an ungainly program: to read from or write to a DOS



Windows from Mac Methods to access PC files from a Mac include (clockwise from upper left) **(1)** exchanging and translating files with MacLinkPlus/PC, **(2)** reading floppies with Macintosh PC Exchange, **(3)** accessing PCs as servers via Personal MacLAN Connect, **(4)** using share folders via Coactive Connector, and **(5)** exchanging files and sharing resources via Timbuktu.

disk, you must first load Apple File Exchange and then insert your disk.

Three sleeker options, all of which are System extensions (INITs), let you insert a DOS disk at any time and work with the disk on your desktop and from your programs as if it were a Mac disk. You can even initialize a disk in DOS format on your Mac with Dayna Communications' DOS Mounter Plus ($99.95, 801/269-7200), Insignia Solutions' AccessPC ($129.95, 415/694-7600), and Apple's Macintosh PC Exchange ($79, 408/996-1010). PC Exchange is also bundled with DataViz's MacLinkPlus/PC ($199, 203/268-0030), a bundle of cables and software that lets you transfer and translate files between Macs and PCs.



Mac from Windows Methods to access Mac files from a Windows PC include (clockwise from upper left) **(1)** opening a file directly over the network, **(2)** reading a disk with Mac-In-DOS, **(3)** exchanging files and sharing printers via Timbuktu, and **(4)** using share folders via Coactive Connector.

Macintosh PC Exchange has a cleaner interface, but AccessPC and DOS Mounter Plus support more types of disks (such as SyQuests) (see *Reviews*, *Macworld*, October 1992). The new AccessPC 3.0 also includes Mastersoft's Word For Word Macintosh translation filters, so you can directly import, for instance, WordPerfect 4.2 for DOS files into Word for Mac.

Note that each program handles *Mac* directory information differently, so, for example, the folder and file names created by PC Exchange will not be understood by DOS Mounter. Therefore, a file originally named 1994 Budget Report under Macintosh PC Exchange, appears as 1994BUDG.ETR under DOS Mounter Plus, and the Mac creator and file types may no longer be associated with the file. You can still use the files, but you should rename them and ensure that the correct creator and file types are associated with each file. (Opening the file from within the appropriate application and saving it will do the trick.)

It's only fair that DOS and Windows users also take responsibility for reading Mac data. Windows users have three options to read and write Mac disks. Two expensive options—PLI's Mac-to-Windows ($199, 510/657-2211) and Pacific Micro Electronics' Mac-In-DOS for Windows ($249, 415/948-6200)—like Apple File Exchange, must be running before you insert the Mac disk. Both support only file transfer. (You can't access their data from a program or through DOS, as you can with the three Mac INITs.)

The third, Insignia Solutions' MacDisk for the PC ($99.95, 408/522-7600), is the PC equivalent of an INIT. It lets you insert a Mac disk in a PC drive and access it through normal DOS commands. When in Windows, you can also format a disk in Mac format and view full Mac names. Unfortunately, MacDisk does not include extension mapping.

If your DOS colleagues still use 5¼-inch disks, you can read them through Dayna Communications' $599 external DaynaFile II floppy drive. But, since 3½-inch disk drives are standard and cheap today (about $75 each), it makes more sense for DOS users in mixed situations to modernize their drives. PC users can even buy a new kind of drive from Teac that reads and writes to both 3½-inch and 5¼-inch disks (about $150) but takes just one drive bay, like a regular floppy drive.

Using High-Capacity Cartridges

Like the Mac market before it, the PC market is increasingly embracing SyQuest and Bernoulli drives for their usefulness for archiving, backing up, and transferring huge data files. Because these sorts of drives are expensive, sharing them is an attractive option, even if you don't do many cross-platform file transfers.

The key to sharing removable drives across platforms is to get SCSI drives for your PC, which means getting a SCSI host adapter board. A few years ago, that would have been an exercise in frustration, as one company's drive typically did not work with another company's adapter board. And you usually couldn't daisy-chain multiple drives to one adapter board. This was not the SCSI that Mac owners knew. But today, thanks to the de facto adapter hardware and driver standards set by Adaptec and Corel Corporation, PC users can install a SCSI that works like it always has on the Mac, allowing easy exchange of drives between systems. For example, in my testing I used Procom Technology's ISA SCSI Xelerator ($359 including cables, 714/852-1000), which was easy to install and easy to use in a cross-platform setup. Sharing a drive was simply a matter of disconnecting it from one system, connecting it to another, and mounting the drive.

If your PC colleagues don't have free slots in which to install SCSI host adapters, they can use external SCSI adapter boxes that plug into the PC's parallel port. But PC SCSI adapters are slower than Mac SCSI adapters. If your PC has a parallel-port-based removable drive and your Mac has a SCSI-based one, you can't exchange drives, but you can still exchange the cartridges.

Although SCSI drives can be run from a Mac or PC, the data on the cartridges is not formatted the same across platforms. But you can get around that, too, meaning you can read cartridges formatted on a PC from your Mac, and vice versa. The DOS Mounter Plus and AccessPC INITs that let Macs read DOS disks also let Macs read DOS cartridges. And PLI's Mac-to-Windows and Pacific Micro Electronics' Mac-In-DOS Plus ($199) and Mac-In-DOS Plus for Windows ($349) let a PC read Mac-formatted SyQuest (44MB and 88MB only), Bernoulli, and Sony magneto-optical cartridges. Mac-in-DOS Plus requires DOS users to set the removable drive as C or D, designations usually reserved for hard drives. You can change the hard drives' letter assignments, but most users don't know how. Doing so also goes against DOS's automatic drive-labeling conventions, which can cause confusion.

What's Right for You

Transportation may be half the challenge of cross-platform file sharing, but there are plenty of solutions, and at least one is right for you. Whether you use a file server, peer-to-peer connections, or E-mail, networks are the conduit of choice because of their availability and ease of use. But sneaker net is still an appropriate option, especially when dealing with service bureaus, clients, or remote offices that may not be connected to your network. Whatever methods you use, there's no longer an excuse to keep from collaborating with your DOS and Windows counterparts. m

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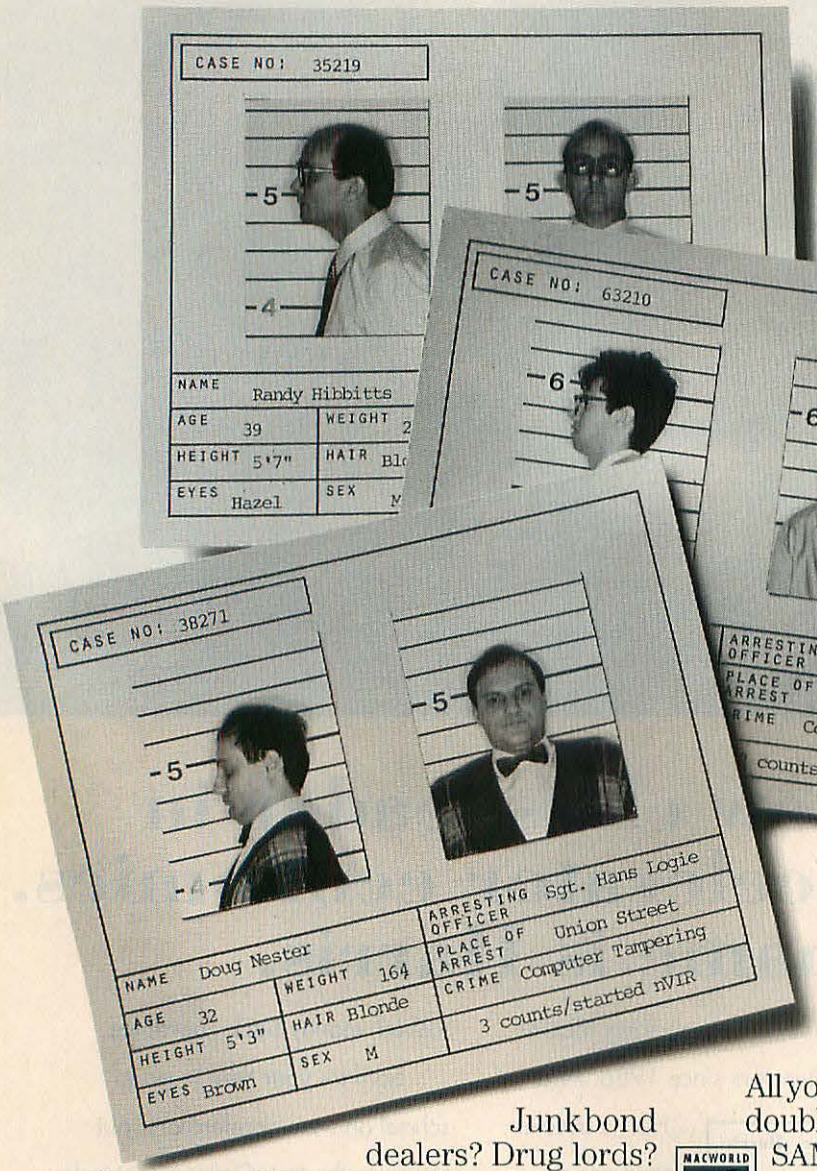

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You see, SAM will constantly monitor for 14 suspicious viral activities. Which is more than any other anti-virus program on the market. And it's the only program that will scan compressed files in System 6.0 and 7.0.

So basically, if your Mac has a virus, SAM will detect it, get rid of it and repair the file. And if your Mac is virus-free, SAM will help to make sure it stays that way. Because it monitors your Mac transparently, working behind the scenes, and only interrupting when a virus is found.

What's more, SAM is simple to install on a Macintosh networking* system, as well as a single-user Mac. All you need to do is load the program disk, double-click on the Installer Icon and let SAM handle the rest.

For the most anti-viral protection, pick up SAM 3.5 at your local retailer. It's the most popular anti-virus program in the world, and will keep you from ever having to deal with this ugly crime. Or these ugly criminals.

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NETWORKS

BY CARY LU

PowerBook Notes

Remote-Control Computing

THERE ARE TIMES WHEN A POWERBOOK cannot replace another Mac; for instance, when the other Mac has something you need—a software package or a resource or some information tucked away in a file. When you can't be there in person, remote control is the next best thing. With remote control, one Mac—the local (guest) Mac, such as your PowerBook—controls another—the remote (host) Mac. The control link can be over an AppleTalk local area network (running on any AppleTalk-compatible wiring and protocol), using AppleTalk Remote Access (ARA) via modems, or by direct modem connection without AppleTalk.

Two companies offer remote-control programs in several versions; all require a different copy—or at least a different serial number—for each Mac.

• ScreenLink, previously called CarbonCopy/Mac (Datawatch Corporation, 919/490-1277), runs only on Macs; it is not compatible with CarbonCopy/PC. ScreenLink is sold in three different versions: a $99.95 Twin-Pak for two Macs, a $299 Zone-Pak with a license for unlimited AppleTalk nodes within a single zone, and a twin pack as part of the $149.95 SuperSet utilities. Each twin-pack version works over AppleTalk or by direct connection via modem, but the Zone-Pak version works by modem only via AppleTalk Remote Access (ARA), not by direct-modem connection. SuperSet includes the excellent Citadel with Shredder security program as well as the Virex virus-detection program, the 911 Utilities disk- and file-recovery program, and Complete Undelete, which lets you recover accidentally trashed files.

• Timbuktu (Farallon Computing, 510/814-5000) is available in three forms. Timbuktu for Macintosh ($199 per copy) works over AppleTalk networks and via

PHOTOGRAPH BY PAUL FRANZ-MOORE/SCREEN IMAGE BY JIM LUDTKE

ARA. Timbuktu/Remote ($195 per copy; $295 for a twin pack) also works on Macs, through direct modem connection but not over AppleTalk. Timbuktu for Windows lets a Windows computer control or be controlled by a Mac—to which it's connected via AppleTalk—running Timbuktu for Macintosh. (Timbuktu for Windows also lets one Windows computer control another, but it isn't suitable for pure Windows networks, since they rarely employ AppleTalk protocols.) Neither Timbuktu for Macintosh nor Timbuktu for Windows is compatible with Timbuktu/Remote.

How Remote Control Works

All the various Mac versions of both programs install an extension and a control panel in each Mac. When you turn on the program, you can set a Mac to be the local or remote computer. The screen of the remote computer appears on the local Mac, which can either control or simply observe the remote Mac. When the local Mac is in control mode, all its keyboard and mouse activities within the remote-control window are transferred to the remote Mac. All of these programs also support bidirectional file transfer; you select files from a standard file-selection dialog box without going through System 7's file-sharing procedure. On the remote Mac, you can set password security and access levels.

Depending on the situation, you may need to set up some special arrangements for access to the remote Mac:

• **Attended remote Macs.** If an associate is available when you connect to a remote Mac, you can simply ask that person to turn on the Mac, start the remote-access program, deal with modems, even run scanners and change CD-ROMs as required. Two phone lines help out; one for the modem connection, the other for conversation. In this mode, two Macintosh users see the same screens—an ideal setup for instruction or troubleshooting.

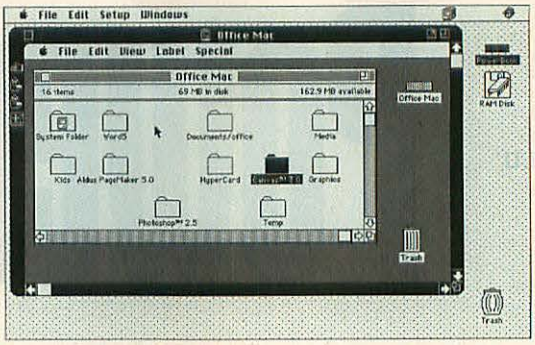
• **Unattended remote Mac left running.** An unattended remote Mac is fairly easy to deal with; just put the remote-control program (or its alias) in the Startup Items folder within the remote Mac's System Folder so if you need to restart the Mac, the program will automatically load.

• **Unattended remote Mac that isn't running.** To turn it on with a phone call, you'll need a remote power switch—such as the PowerKey (Sophisticated Circuits, 206/485-7979) or the PowerSwitch LT (Radiant Enterprises, 415/296-8040); which one you get depends on the type of Mac being accessed (for more details, see *PowerBook Notes*, August 1993).

Basic Operation

When you sit at your local Mac with remote control running, you are, in effect,

continues



Remotely Controlled When you're using a remote-control program—such as Farallon's Timbuktu for Macintosh, shown here—the screen of the remote Mac being controlled (here, Office Mac) appears in a window on the screen of the local Mac that's doing the controlling (in this case, a PowerBook). All keyboard and mouse activities taking place within the PowerBook's remote-control window are automatically transferred to the screen of the remote-controlled Mac.

sitting at the remote Mac. There are some complications. First, the remote's screen updates slowly (see the chart "How Slow Is Remote Control?"). Over LocalTalk, the screen updating is fast enough that you can perform most computing tasks without undue discomfort. A complex graphics-intensive document may stretch your tolerance, however.

Connections by modem—either by direct connection or ARA—are much slower; you'll probably be willing to put up with the process only for important tasks that can't wait. Use 14.4-Kbps modems for the link; 9600 bps is absolutely the slowest tolerable speed for running a text-based program. Only the really desperate will ever run a graphics program over a modem.

For Finder tasks, such as searching hard disks for a file, remote control by modem works adequately. Why would you want to use remote control for a file search when you could set file sharing for the entire hard disk and use ARA to look through the files? Because remote control gives you all the resources of the remote machine. You can launch a program or reconfigure the computer. Programs on the remote machine run as fast as usual, except for the screen updating—which is a major limitation, since most programs do a lot of screen updating.

As delivered in the box, ScreenLink in its direct-modem mode and Timbuktu/Remote support mostly older modems. If you have a newer modem, you should contact Datawatch or Farallon to get support files by mail or by modem. Neither program supports Apple's Communications Toolbox, which would have made installing new modems easy. ARA uses the Comm Toolbox, so if you have problems with modem compatibility, you can use ARA instead.

Screen Size and Bit Depth

The remote Mac's screen will probably be larger than your PowerBook screen (640 by 400 pixels for most models). To accommodate large screens, both ScreenLink and Timbuktu put the remote screen in a scrollable window. Both autoscroll: in

continues

How Slow Is Remote Control?

To test relative performance of remote-control programs in various operating modes, I measured the time for scrolling a Microsoft Word document from a PowerBook connected to a desktop host via LocalTalk or a 14.4-Kbps modem.

For equivalent modes, Farallon's Timbuktu for Macintosh runs almost twice as fast as Datawatch's ScreenLink, an advantage that justifies Timbuktu for Mac's much higher cost—three to four times more than ScreenLink. And Timbuktu for Mac is the only program that supports Clipboard transfer between Macs.

In direct-modem mode ScreenLink runs about one-third the speed it does in ARA (AppleTalk Remote Access) mode, so use ARA instead. ScreenLink is adequate for occasional use, but if you rely on remote control regularly, you'll want Timbuktu for Macintosh. Although Timbuktu/Remote runs a little faster over phone lines, the greater flexibility of Timbuktu for Macintosh makes it the best choice.

Scrolling Time

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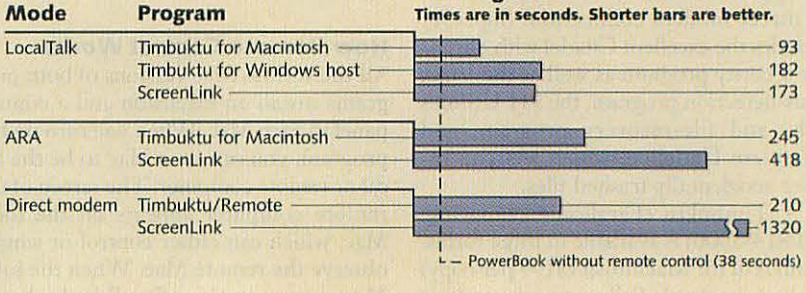

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ScreenLink, when the cursor reaches the edge of the window; in Timbuktu, when it gets within an inch of the edge. If you find the effect disorienting, you can turn off autoscrolling and use standard scroll bars to move around the window. However, if you're accessing a remote Mac with a very large screen, be prepared for a lot of scrolling; the disk icons and Trash Can are always off in the distance. Setting windows on the remote Mac to a smaller size helps, but the best solution is to set the screen size of the remote Mac to the size of the PowerBook's screen. The $39.95 system extension MiniScreen from The Morgan Davis Group (619/670-0563) lets you change a Mac's screen size—the predefined 640-by-400-pixel PowerBook size works best. Then you can give the remote window the full screen on your local PowerBook. Don't worry if you forget to set the screen size in advance. You can start the remote-control session, change the screen size with the MiniScreen control panel, and restart the remote Mac; but you will need to reestablish the connection after a restart. MiniScreen was originally designed to let software developers simulate various screen sizes; a time-limited demonstration version is available from online services and user groups.

The bit depth of the remote Mac's screen can create some problems. For ScreenLink, which works only on 1-bit black-and-white screens, this is a moot point. Timbuktu supports grays and colors; however, black-and-white works fastest. And if you switch the remote Mac to black-and-white, you can avoid the occasional legibility problems that may arise when viewing gray or color images on a black-and-white PowerBook screen.

Doing DOS and Windows

Timbuktu for Windows lets you extend the remote-control concept beyond the Macintosh. A Mac can control a Windows computer and vice versa, and the computers can exchange files. There are some special considerations.

- Timbuktu for Windows does not support a modem directly, and there is no equivalent of ARA for a Windows computer. The only way to control a Windows computer over a phone line is to set up a Mac with ARA as an intermediary. You dial into an ARA-equipped Mac, run Timbuktu to take control of it, and start another Timbuktu session of the ARA Mac that takes control of the Windows computer. Your PowerBook thus controls a remote Mac that in turn controls a Windows computer. This three-point operation is for the truly desperate; per-

continues

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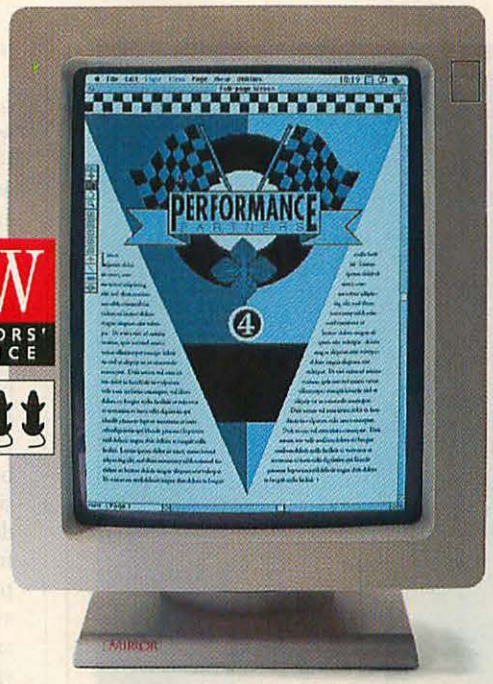

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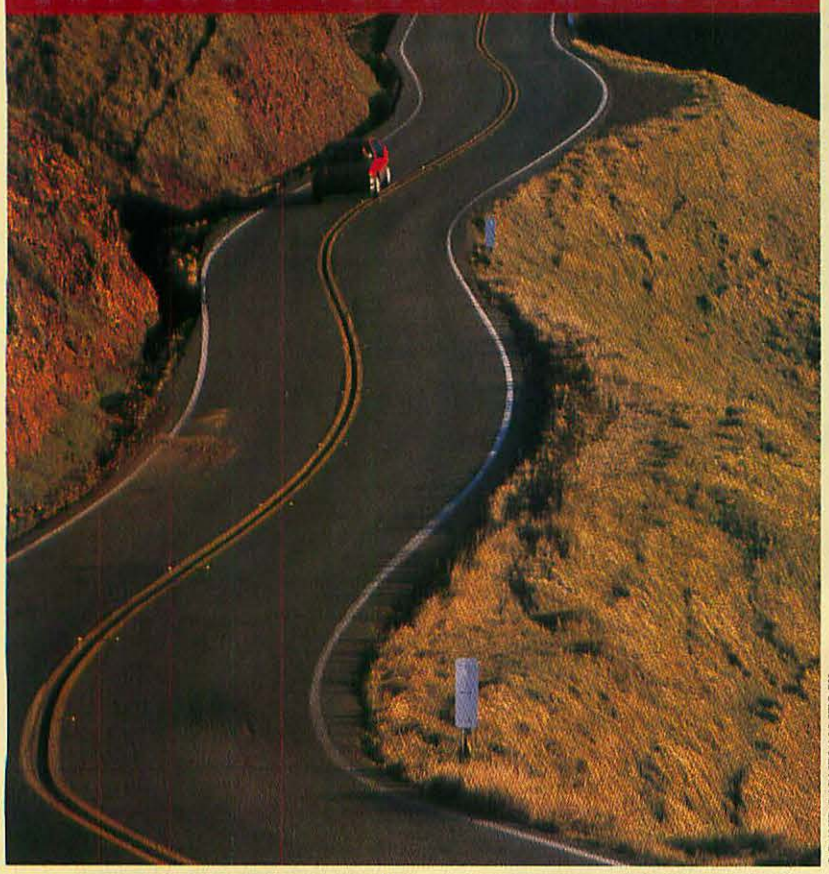

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formance is excruciatingly slow.

• The standard Windows color screens are often illegible in black-and-white; menu items frequently disappear. For screen legibility and maximum speed, when setting up the Windows computer choose VGA with the monochrome screen video driver supplied with Windows 3.1 (in the Main program group, choose Windows Setup, then System Settings).

• You can also control DOS software by running the DOS prompt from within Windows. The default setting for the DOS prompt gives it the entire screen, bypassing the Windows screen driver; since Timbuktu can only transfer Windows screens, the DOS session disappears from the controlling Mac's screen. At this point you can't press control-enter to switch to a DOS session in a window, since the Windows computer will not respond. To correct this problem, change the Windows setup. Use the PIF editor in the main program group, and edit the file DOSPRMPT.PIF in the main Windows subdirectory. Set display usage to Windowed instead of Full Screen; the DOS session will then come up in a window that Timbuktu can transmit to the remote computer.

• Windows programs typically make heavy use of function keys (F1 through F15, home, end, and so forth), which are missing on PowerBook keyboards. Use Connectix PowerBook Utilities (CPU) 2.0 to get these function keys on a PowerBook. A potential problem, however, is that CPU doesn't support compound keys, such as control-F1. In addition, CPU's function-key emulation does not work reliably in DOS sessions. An alternative is to connect an extended keyboard to the ADB port of your PowerBook.

Future Steps

Faster telecommunications should mitigate the performance problems. Higher-speed modems and digital connections via ISDN (64 Kbps) or switched 56 Kbps will help overcome the sluggish operation inherent with 14.4-Kbps modems. Future Macintosh applications might include an option to suppress unnecessary screen updating to make the remote-control process smoother.

Even though today's remote-control programs are far from perfect, they do provide you with the essential ability to go on the road without leaving your office behind. m

CARY LU is a *Macworld* contributing editor who covers mobile- and remote-computing issues in this monthly column. His books include *The Apple Macintosh Book* (Microsoft Press, 1992).

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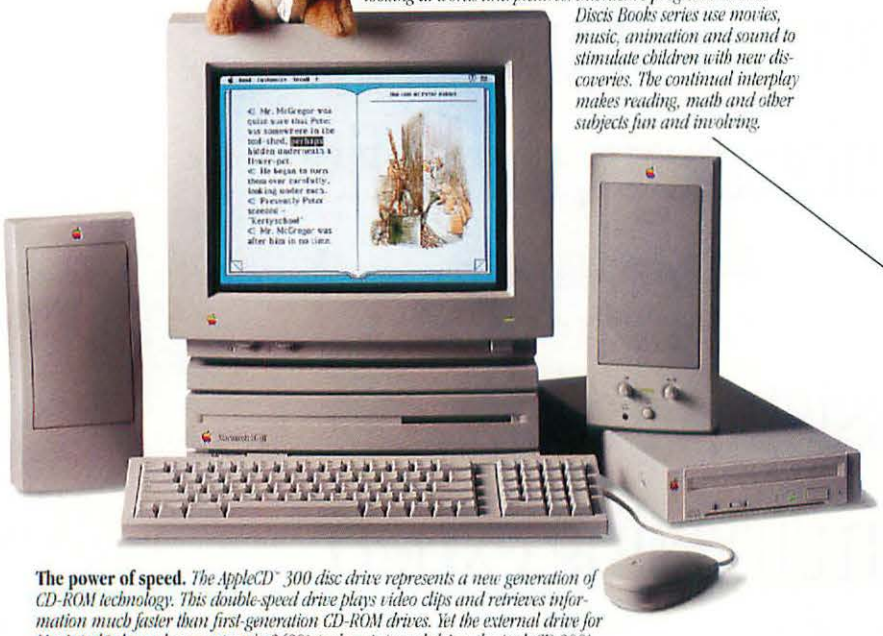

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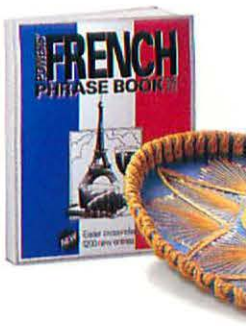

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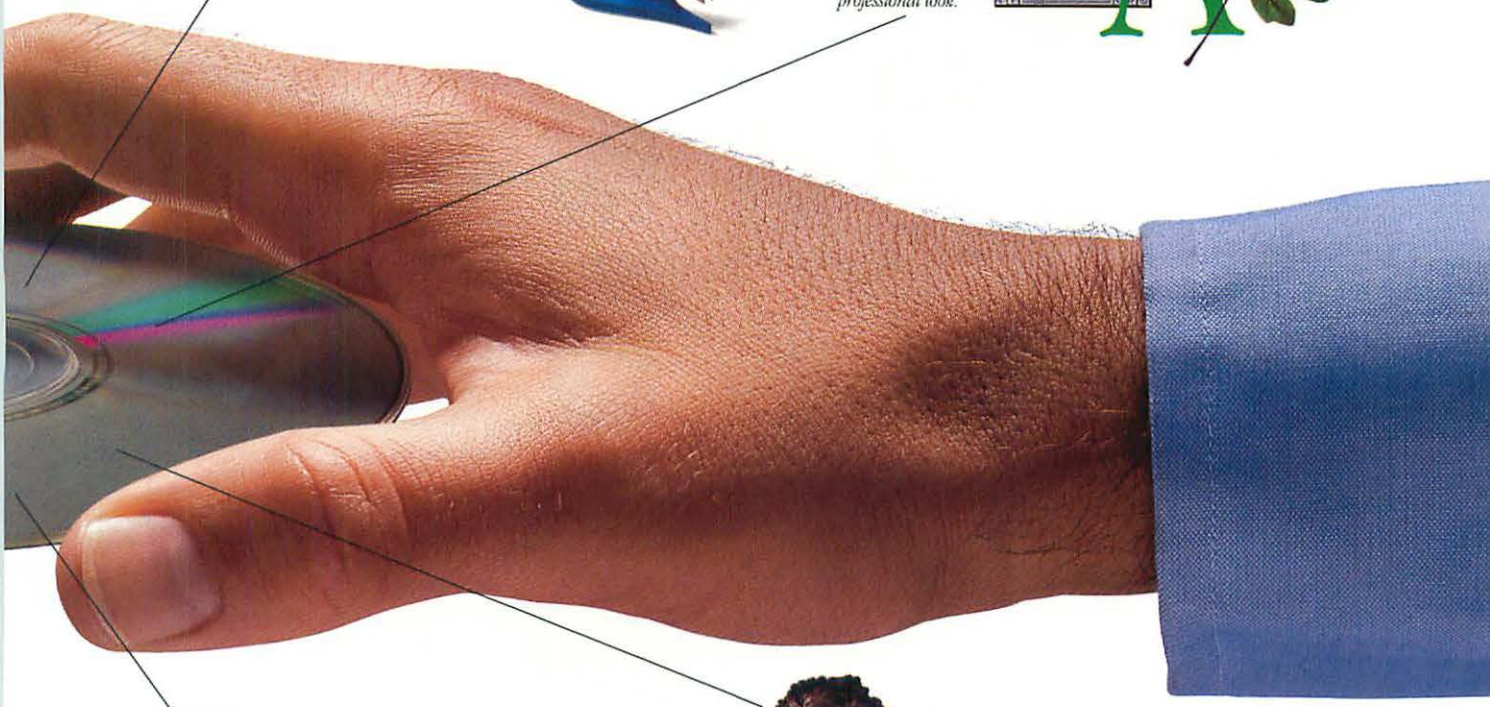

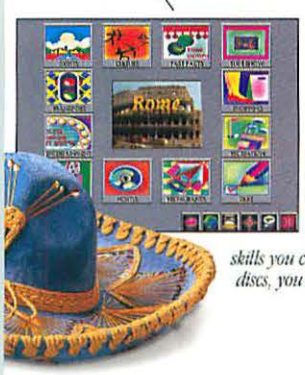

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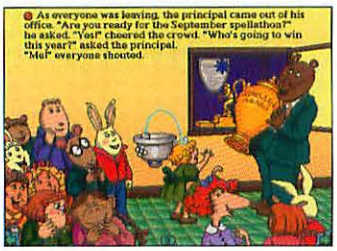

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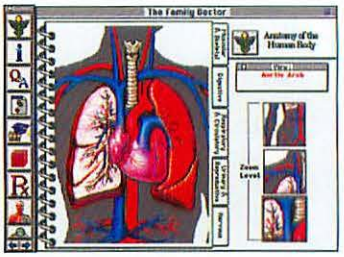

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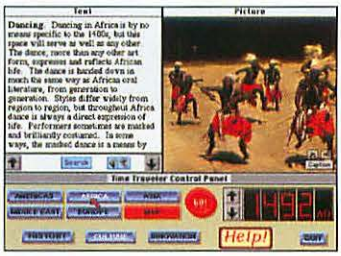

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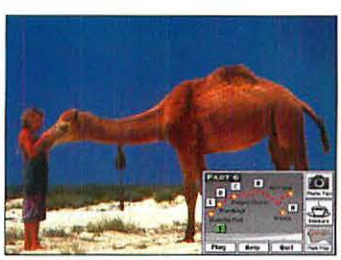

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BY DAVID POGUE

The Desktop Christmas '93

Cheap and cheery things to put under the Apple tree

HEY, WHAT IS WITH EVERYbody lately? You can't pick up a newspaper without reading about the gloom and doom at Apple Computer. Columnists are ranting about the Death of the Macintosh. Apple's stock price keeps having system crashes. I haven't heard such paranoiac hysteria since the original Macintosh model—remember that one? the toy? the one that would never last? —hit the streets.

Anyway, I'm certainly sympathetic to those affected by the Great Mac Depression of '93: to those laid-off Apple employees, to the columnists who write about them, and to the Mac fans everywhere who're alarmed by all the alarmism. Thus, in an effort to inject a little cheer into this gloomy season, I offer my fourth annual Holiday Gift Ideas for the Mac Nuts in Your Life. As always, the rules are simple: nothing over $50 and nothing buggy, cheesy, or predictable.

Apple Golf Ensemble

Apple: it's not just for computers anymore. Perhaps in an effort to reassure its jittery stockholders, Apple now sells such circuitry-free equipment as wristwatches, felt-tip pens, and directors' chairs.

And golf gear.

Don't ask—I can't explain it—but there it is in the Apple Catalog (800/795-1000), nestled between the LaserWriter Select and the Apple II SuperDrive Controller Card. The Apple-logo golf balls are $30 per dozen. The $35 Apple Golf Umbrella, according to the catalog, "protects an entire foursome from unexpected showers!" (It's 58 inches across, nylon, and fiberglass. The umbrella, I mean, not the catalog.)

Of course, your favorite Mac/golf lover will also go for an Apple Golf Shirt, pure cotton, with shoulders "reinforced with double-needle tailoring" (black or white, $30). And to top off your gift, top off its lucky recipient with an Apple Golf Cap. "Nylon and plastic? Never! Our cotton poplin cap is designed for comfortable sun protection." With its genuine leather band and solid brass buckle, this $11 item could be the best value from Apple since the PowerBook 145.

APS PowerBook Ensemble

APS Technologies (816/373-5800) makes two stunningly useful stocking-stuffers for your favorite PowerBook owner. First, complying with the industry trend of ditching Apple's monochromatic palette of gray paint shades for more colorful alternatives (see "Screenies," below), there are the APS PowerBalls. These Day-Glo trackballs replace the soot-colored one that comes with each PowerBook ($9.99 apiece, in neon orange, shocking yellow, violent green, and obscene pink; specify PowerBook model). For best present-unwrapping reactions, give the full $19.99 four-color set (but failing to mention that these are not, in fact, gumballs could have unpleasant results).

But the PowerBalls can fill up only four toes of the stocking. If you want to fill the big-toe slot with something useful, consider this. A PowerBook's SCSI jack is an odd-looking square matrix, not the wide rectangular 25-pin jobber we're used to. Apple would be delighted to sell you a $39 converter cable so that you can, in fact, plug a SCSI device into the jack.

APS's SCSI Boy, however, is a simple plug that performs the same feat with less clutter and expenditure ($29). And for $49, you can get the less funnily named but doubly useful SCSI Doc: an identical-looking plug that, with the flip of a switch, becomes an adapter for use with SCSI Disk Mode (where the PowerBook itself becomes an external hard drive for another Mac), thus saving you from having to purchase yet another, *different* $39 Apple cable.

Screenies

If you could meet the people I teach about the Macintosh, you'd understand why the Cupertino Corporate Doldrums are irrelevant. These are people who've never used a computer before. In fact, they're not particularly crazy about even having one. But they tolerate the Mac because it's far less intimidating and machinelike than any other computer. Mention QuickTime, virtual memory, or even RAM, and they cover their ears and start singing "Tomorrow" at the top of their lungs. What they *want* to know is how to get double-spaced text. Or print an envelope. Or find a chapter they typed last week.

These people want to make the computer as uncomputer-like as possible. To that end, Rusty Schwartz offers a unique twist on masking the nerdiness: interior decoration for your monitor. Not wallpaper, really, but a Velcro-backed cardboard frame that covers up the boring gray bezel with a lush colorful painting (available from CompUSA, Egghead, MacWarehouse, and Hallmark; $11.95 each, SE size $9.95). (Whatever's on your screen is still visible, of course, through the cutout center of the frame. On the other hand, I've got a couple of students who'd probably prefer one that *doesn't* have the center cut out.)

There are 51 different designs. Many resemble, as I said, wallpaper: tropical,

continues

patterned, floral, whatever. Others make your Mac look like some more comforting American knickknack: a giant red Etch A Sketch frame; a 1950s-style TV set; an ornate, theatrical, rococo frame showing cupids and fleurs-de-lis. As a jaded pragmatist from New York, my personal favorite is the one made of write-on, wipe-off material. I scrawl phone numbers and other notes on it during the day, giving "I wrote it on my computer" a whole new meaning.

The Macintosh Reader

Great book. Interviews. Secrets. Insider Apple stories. Little essays—54 of 'em. Funny, alarming, surprising, sometimes maddening. Interesting? Always.

What went wrong with Steve Jobs. Sculley vowing never, ever *to license the Mac Operating System. An Apple head-programmer's 1984 interview: future of the Mac.*

Kawasaki. Alsop. Bunnell. Shapiro. Tognazzini. Famous folks with something to say.

Style? Yes. Too much. Short sentences, almost obnoxious. Doug Clapp wants to be Hemingway, I guess. Dashes—and ellipses . . . and very short sentences. And lots *of italics. The hand of one Clapp sounding.*

Still. He didn't write all 450 pages of it: only the intros and a few of the essays. Otherwise—juicy stuff. Random House Electronic Publishing (212/572-2600). $25.

CopyDoubler 2.0.1

I'm ordinarily leery of giving a piece of software as a gift. I mean, someone unwraps 16 layers of paper and cardboard, and at the center is—a floppy disk. The joy is somehow not as visceral as when, nestled in the mounds of ripped-off wrappings, lies, say, a camcorder or a BMW.

Still, CopyDoubler (Fifth Generation Systems, 504/291-7221, $59, about $40 by mail order) *will* bring joy to any System 7–savvy Macintosh user. And it's a bliss that renews itself every time your recipient tries to copy something or empty the trash. Beautifully, simply, and quietly, CopyDoubler intercedes, taking over these interminable tasks from the Finder and doing them at least twice as quickly.

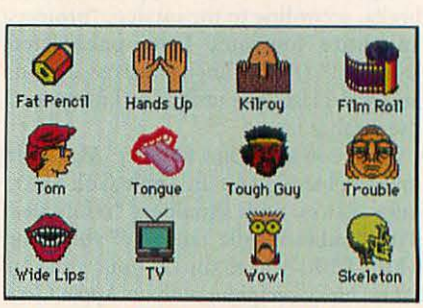
One more point: It's easy to set up CopyDoubler to copy specific folders to a certain location, either at the touch of a key or at shutdown. This is news. It means that you never again have to think about backing up! Each day when you choose Shut Down, CopyDoubler backs up whatever folders contain your documents—quickly and automatically—and then dutifully turns off the computer.

Icon Gallery

Can you figure out what's missing from these instructions for replacing an icon in System 7? (1) Copy a graphic to the Clipboard; (2) highlight an icon; (3) choose Get Info from the File menu; (4) click on the existing icon and paste.

What's missing, naturally, comes before you even start: how you're supposed to *create* the replacement icon to begin with. We are not all, alas, Norman Rockwell. (Many of us aren't even Jackson Pol-

continues



Icon Heaven The lucky recipients of Icon Gallery can have a different hard drive icon every day for 2.3 years, if they are so inclined.

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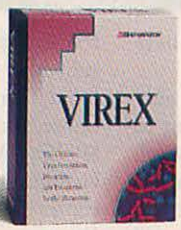

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Circle 37 on reader service card

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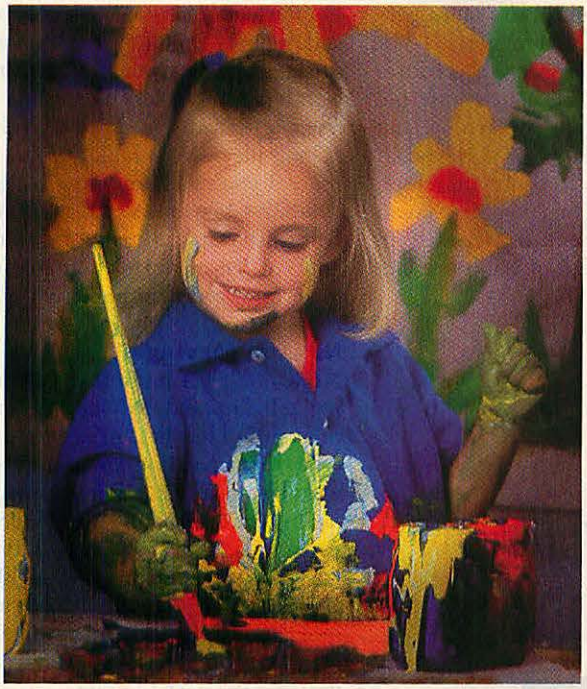

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InfoFAX

Please see page 256 for instructions.

lock.) Even icon-editing programs are useless if you're talent-free (see *The Desktop Critic*, July 1993, for more on these).

Enter the simple, sweet, serendipitous concept of Icon Gallery ($59.95, about $35 by mail order; Component Software Industries, 609/497-4501). It's 850 professionally painted color icons. People, appliances, logos, plants, design—disk upon disk of them (see "Icon Heaven"). They're enfoldered by category, almost universally usable, and unbelievably tempting. Within 30 seconds, you can make your landscape of files and folders more personal, more colorful, and funnier.

(Techie note: Each icon in this collection is actually a ResEdit resource file containing the large, small, color, and black-and-white versions of that icon. If you are handy with ResEdit, therefore, you can slap these icons even on System 6 files, or install them permanently in your own files instead of using the Get Info method.)

America Online Starter Kit

For the fourth consecutive year, I've prodded America Online to develop a gift certificate good for using its dial-up modem wonderland. Such a certificate would make a perfect gift. They're still saying "Good idea. We'll look into it." Meantime, if you're a Santa on a budget, call 800/827-6364 and ask for a free America Online starter kit. It comes with ten free hours of dial-up time—more than enough to get your recipient hopelessly addicted.

Newton MessagePad

Now, don't get huffy that I'm breaking my self-imposed $50 price barrier on this one. The list price for Apple's remarkable, palmtop, keyboardless, handwriting-recognizing, note-taking, quick-faxing, phone-dialing, day-scheduling, Etch A Sketch–descended, snazzy corporate show-off computer is more like $700 (408/996-1010). If the price bothers you, look at it this way: give somebody a MessagePad, and you're covered, gift-wise, for the next 14 years.

And if you give a loved one a Newton, you'll also be covered kiss-wise. One guy's opinion: this is a *fantastic* machine. Yes, OK, fine, be that way. It takes three days before you and it reach a handwriting understanding. There. I've said it.

But oh, what a world opens then. You're checking your answering machine for messages; as you jot down the phone numbers on your MessagePad, you're actually entering them into your phone-dialer for future use. Or you're drifting to sleep, and you get an idea for tomorrow's presentation. Scrawl it on the MessagePad and go back to sleep. Or you write the dinner tab on the MessagePad's Conversion screen, and you instantly know what the tip should be. And so on.

Advice-wise, here's my offering: The way to a Mac or gadget freak's heart is with a MessagePad.

The Upshot

Day-Glo trackballs . . . hand-held computers . . . jumbo golf umbrellas . . . You know what? I find it impossible to buy into the Mac Is Dead school. Not for an instant. I think this must just be a slow news year. I'm no MBA, but I can't see how any company that makes a machine this great couldn't come back from a slump. Stockholders, schmockholders—my computer plays movies and talks! m

Modesty forbids DAVID POGUE from mentioning the Christmas-gift candidates he had a hand in creating: *Hard Drive*, a $5 paperback thriller (Berkley Publishing Group, 1993); *Macs for Dummies*, 2nd Edition; and *Macworld Macintosh Secrets* (both IDG Books Worldwide, 1993).

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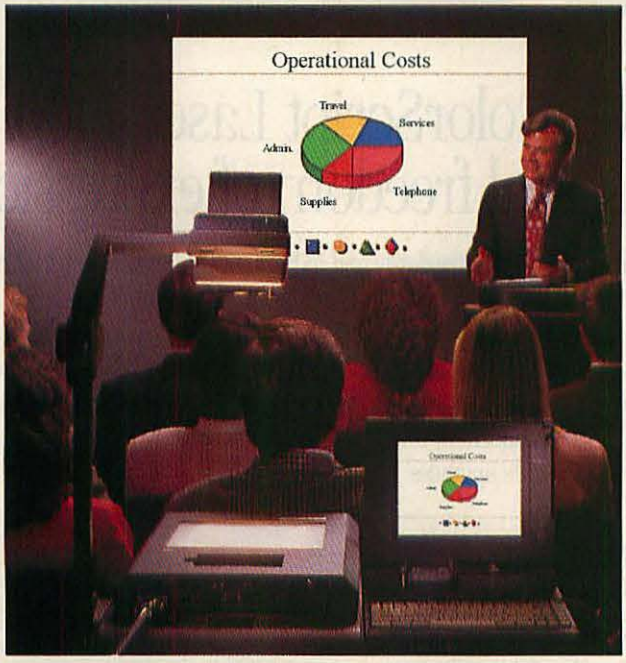

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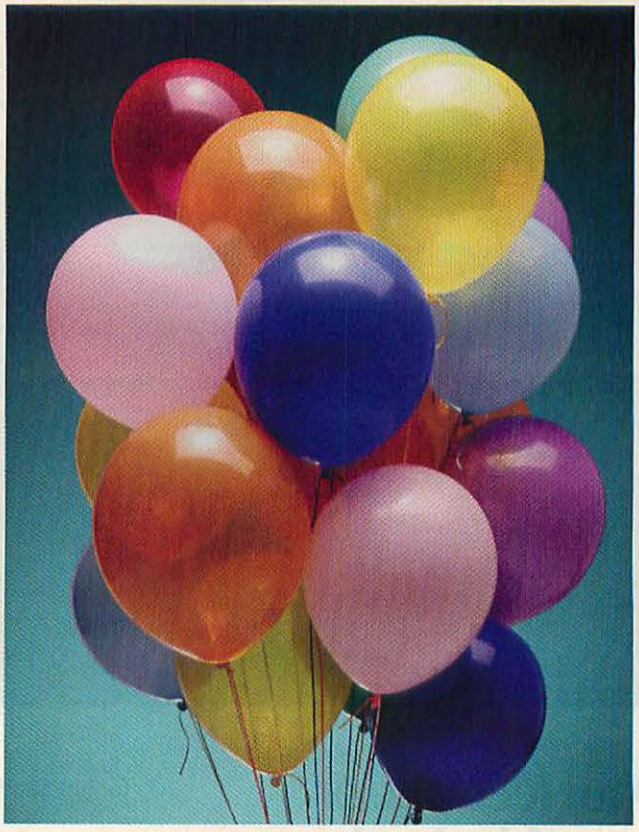

Production Notes

Picture scanned at 150%, 400 dpi from a 4" x 5" transparency using the default settings. Final line screen was set in Adobe Photoshop and exported as a CMYK eps file. No color correction was made. Film was output from a Quark file at 133 line screen.

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THE ICONOCLAST

BY STEVEN LEVY

Duo Trouble

Is it too late for Apple's lightweights?

APPROXIMATELY ONE YEAR after the October 1992 introduction of Apple's Duo notebooks, I ventured to a New York hotel suite for an advance look at the new models. It had not been a great year for the Duos. Apple had presented these as the Certs of computerdom: two computers in one. In theory, a Duo provided half of the ultimate solution to the conundrum facing self-styled road warriors who yearn for portability on the road and workstation power in the office. When the ultracompact notebook met its other half—the docking station—the union of Duo and mothership would result in a fire-breathing modular-style Macintosh.

That was the theory. In practice, Duos weren't selling as well as Apple had hoped. The Duo line's product manager, Peter Fletcher, was claiming a somewhat limited satisfaction at their performance—"after a slow start-off, things are much better," were his actual words. But elsewhere in this issue Cary Lu's feature, "New PowerBook Duos," reports an estimate that only about 100,000 had been sold through June. Considering that Apple has hopes for Duo sales to run neck and neck with traditional PowerBooks—which sell in the millions—that figure is abysmal.

Will the new models turn things around? I'm guessing not. The problem is not so much the Duos but the docking—a concept whose time never really arrived.

Birth of the Duos

Trouble came as soon as Apple unveiled the first two Duos. Their primary virtue was subtraction: by shedding certain parts, such as floppy drives and connection ports, Duos weighed in at a mere 4.2 pounds instead of the PowerBook's 7. This was good—very good. What's more, these newcomers were heavy-duty computational beasts. They may have been light, but they were certainly not lite. On the more powerful model, the Duo 230, the microprocessor runs at a blistering 33MHz. (The 210 clocks in at 25.)

Then there were the docks, which by virtue of a simple connection would make a Duo into a regulation Macintosh. The smaller ones—let's call them baby docks—fit onto the back of the laptop. The bigger ones—Duo Docks by Apple's description, papa docks by mine—actually swallow up the whole thing like some desktop leviathan. Once docked, your little laptop suddenly transforms itself into the heart of a full-blown Macintosh cockpit that could support color monitors, printers, floppy disk drives, full-size mice, and even NuBus cards.

Apple's expectation was that people would snap them up: Duos on the road, docks at home or in the office. The pundits of technoland lined up to blow the alarm—few Apple products have garnered such rave reviews as did the Duos last fall. The Duos' nifty dimensions had gotten the company off on the right foot.

But that foot promptly stepped on a banana peel. While the Duos were impressive, the docks were missing in action—an especially embarrassing situation since Apple had made a big deal about how, unlike some docking schemes attempted in the DOS world, the Duos were going to prove that the two-in-one concept could work. It's a touchy business, selling a new paradigm like docking. Even if everything goes right, you have a big job ahead of you. But if things *don't* go right, problems multiply logarithmically.

So imagine the problem when Apple began selling Duos but was not able to immediately offer the other half of the equation—the docks. It was like salt without pepper, the Captain without Tennille. Further compounding the problem was the fact that Apple's Express Modem, for one year the only internal modem that fit into the nonstandard viscera of the Duo, was also a no-show. And when it did arrive, it was plagued by demonic glitches.

Even now the folks at Apple have no good explanation for this bungle. "There was no one thing that slowed us up," says Fletcher. "We failed to make some pieces available that were important to the concept." As a result, the first Duo customers were not docker types, but those who simply loved the idea of a 4-pound PowerBook, even if it had no floppy disk drive. They already *had* Macs. To get files into and out of the machine, Duo owners used their laptops as remote SCSI hard disk drives to desktop machines—or they used a different adapter to hook up the optional external floppy drive.

In the confusing demolition derby of Apple's product introductions, price cuts, and discontinuations, the whole docking concept got lost. Only recently have the components become available—not only Apple's baby and papa docks, but a host of third-party products described by Lu in his article. Yet I suspect it is too late. Apple may have pulled off the concept with more panache than Compaq and other hopefuls, but there is something essentially flawed about the idea itself. The public indifference to Duos thus far suggests that the whole idea is headed into the dustbin of technology.

Small Is (Almost) Everything

I do want to emphasize that in some ways the Duos are very cool machines. I am

continues

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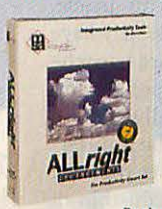

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Circle 130 on reader service card

impressed with the way Apple has managed to squeeze near-Quadra power into such a little container. After lugging a standard PowerBook for a couple of years, I certainly appreciate the fact that a Duo fits snugly in a briefcase and doesn't stretch your pecs. But that's the end of the positives. In case you blinked, let me repeat: a Duo is smaller than a PowerBook and lighter than a PowerBook. But in every other respect, a standard PowerBook—anything from the 160 on up—is far superior. Because Apple figured that people would supplement Duos with docks, they left off all sorts of goodies.

The biggest hole, of course, is the missing built-in floppy drive. Maybe it's me—I do know people who love Duos—but I am constantly ill at ease when using a computer without an easy way to get information in and out. Carrying around a separate external floppy disk drive and adapter certainly isn't a solution—if you're going to lug all that junk around, why not just use a standard PowerBook? And constantly venturing over to my desktop Mac—or to my papa dock, if I had one—seems a perpetual annoyance.

Even though Apple's various solutions for getting software in and out of Duos seem to work, they are all a pain in the neck. Just because it's easy to hook up a cable or two doesn't mean that the process isn't annoying. What makes it worse are various mandatory shutdown features when docking. They are there for a good reason—to keep everything in the fidgety SCSI chain working properly—but who wants to restart just to load a program?

On the road, the situation can get dire. What if an application becomes corrupted and you need to reload it? What if someone slips you a disk with his or her new book on it—or one of those Voyager electronic books—and you want to read it? What if you call up a new application and you get a message reading, "Insert master disk for verification"? If one of these events crops up on an airplane, you have no choice but to slam down the lid of the Duo and watch the movie.

Then there are the less onerous compromises. The slightly smaller screen one can get used to, but the Duo keyboard is, to my dancing fingers at least, just a tad too tiny for adequate touch-typing. At least it comes close, though. On the other hand, the shrunken Duo trackball—no bigger than a malted-milk ball—is inadequate for the task. Every cursor move is an adventure.

The docking option was supposed to redress the compromises, of course. But the economics don't make sense. Those docks are expensive—even a baby dock, which basically bequeaths the Duo with the ports and connectors of a PowerBook 160, lists for $579. (Prying one of those things off a Duo is like solving one of those wooden Japanese puzzles.) And if you use a baby dock, you're still stuck with the smaller keyboard and the thumb-twiddling trackball. Of course, if you use a papa dock, your Duo can be attached to a full-size keyboard and a regulation mouse. But that monster starts at $1079—not much less than the street price of a low-end Centris!

If you lust after a Duo, buy one—but if you work at a desktop at all, forget about buying a dock—get a standard-issue Mac instead. That way, you have two independent units—invaluable if you ever share your machine with a friend or colleague, and surprisingly useful even if you're a one-person operation.

Dry-Docked

I suspect that even Apple is beginning to realize the futility of pushing the dock concept. When I attended the road show of the new Duos, the 250 and the 270c, they were sitting on a tabletop—without a docking unit in sight. In fact, the key improvement in the machines themselves, the active matrix screen technology (which, I do admit, is quite beautiful), is in a sense antithetical to *the docking* ethos. If people want to split the machine function between travel and docking, wouldn't they want to perform their serious display work on a large-screen monitor? The answer is that *people aren't* docking and don't care about docking. That is why Apple believes that customers will pay for expensive and gorgeous active matrix screens—because Duo 250s and 270c's are very rarely going to find themselves swallowed up by papa docks, and that makes other screens irrelevant. Further evidence that Apple is fudging on the docking concept comes from its intention to sell the Duo 230 in a low-cost bundle (around $1500) with a floppy disk drive.

Which brings me to the obvious conclusion: instead of coming up with elaborate schemes to mitigate the incomplete nature of the Duo, Apple should devise a new generation of PowerBooks that gives us *all* the features we need in a smaller, lighter package.

When Apple figures out how to get the PowerBook down to fighting weight, the Duo will go the way of the dinosaur. I bet we won't hear many requiems for that trackball.

See you later, dock! **m**

STEVEN LEVY's new book, *Insanely Great: The Life and Times of Macintosh, the Computer That Changed Everything,* will be published by Viking in January.

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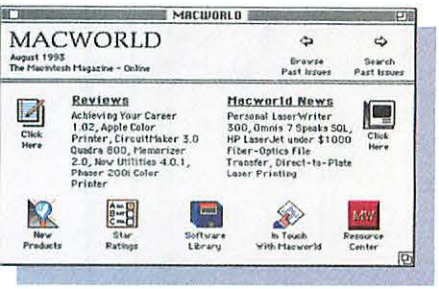

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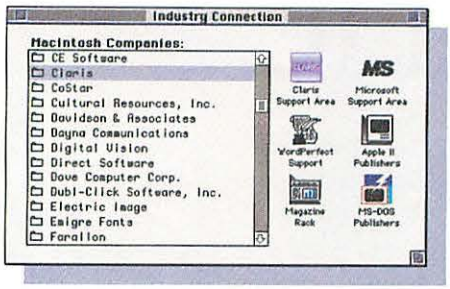

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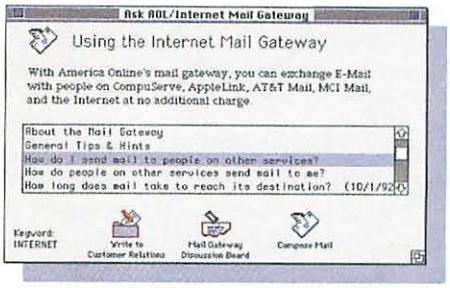

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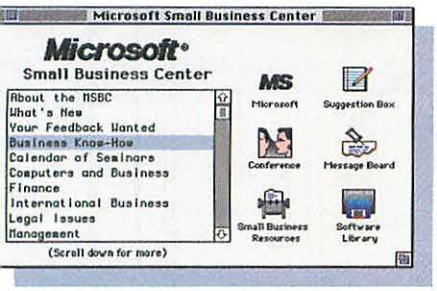

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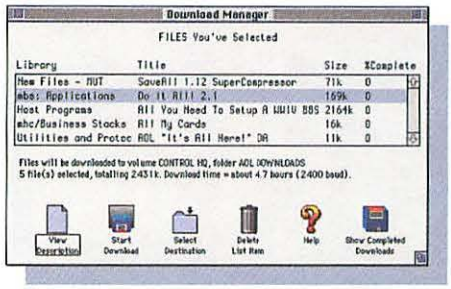

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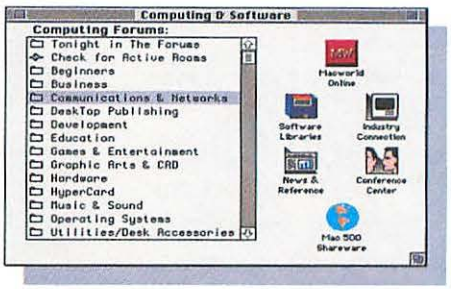

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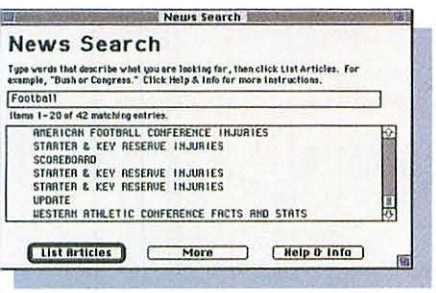

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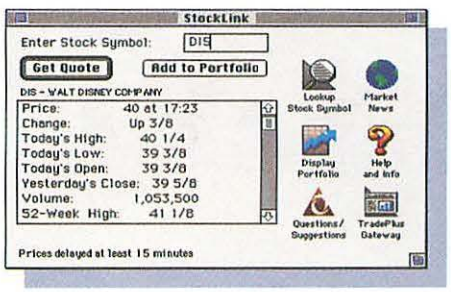

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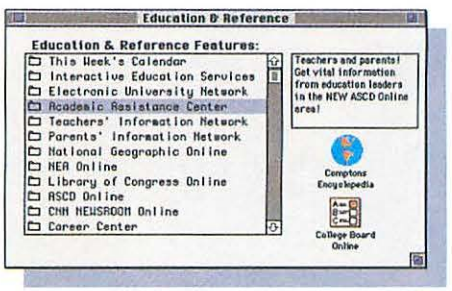

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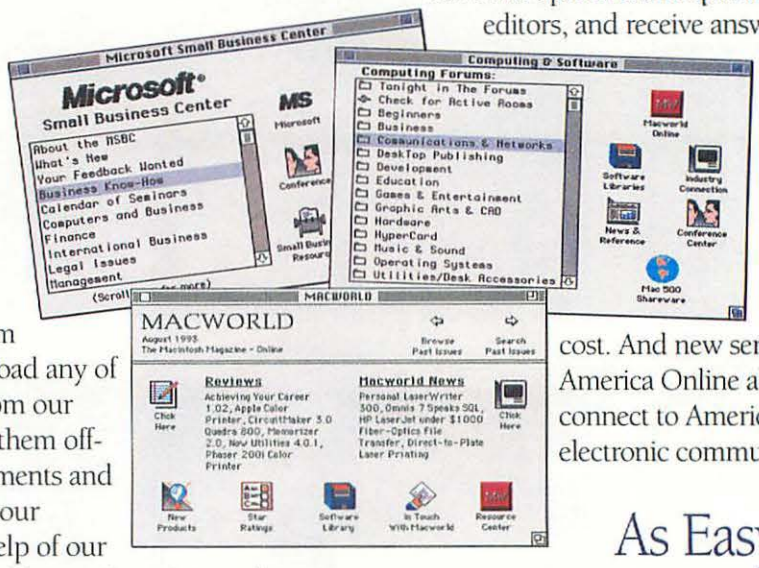

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BY DEBORAH BRANSCUM

Tips for Buying by Mail

Compare policies, take notes, and always use a credit card

THE READERS OF *MACWORLD* often shop by mail, and most of them are happy with their purchases. But Richard Abanes of Irvine, California, is an exception. On August 4 of this year he mailed a check for $4149 to Data Link Resources of Austin, Texas, for a new PowerBook 180 with 14MB of RAM, a 160MB hard drive, and a Global Village modem. According to Abanes, he decided to patronize Data Link in part because of the prices and in part because of the answers he got to his questions. Abanes said he asked company owner Sanjiv Misra if Data Link was an authorized Apple dealer and also asked if the PowerBook's serial number would be changed. According to Abanes, Misra said Data Link *was* an authorized dealer and promised the PowerBook would have an Apple serial number. Misra denied to *Macworld* that he made those statements.

After the check cleared and the products arrived, Abanes might have been happy, except the PowerBook's original serial number was replaced with another number and the machine seemed to be faulty. The Data Link invoice states there is a 30-day full-replacement policy, an offer that Misra promised to fulfill but later reneged upon, according to Abanes. Misra told *Macworld* that his company had tried to accommodate Abanes's ever-changing demands and said, "If he needs it fixed, we'll fix it. If it needs to be replaced, we'll replace it." Misra said the Apple reseller from which he bought Abanes's PowerBook changes serial numbers "to protect everyone." Apple and Apple dealers typically don't honor warranty service on reserialized computers, however.

Abanes would have been in a better position to negotiate a solution with Data Link if he had used a credit card instead of a check in purchasing his PowerBook. A credit card is the single most effective tool consumers have to protect themselves. Had Abanes used a credit card, he could have disputed the payment for his PowerBook while he worked to resolve the situation.

Because some companies refuse to accept credit cards, and others, like Data Link, add a surcharge for credit card use, many people simply send a personal check, money order, or cashier's check to save money when making large purchases. As a result, nearly every year I get calls from anguished readers who have paid thousands of dollars for Macintosh equipment that they never received—because the checks went to a company going out of business. Two years ago CDA Computer Sales closed its doors. Last year MacSource went belly-up, and this year MacBest went out of business. In such situations, credit card holders aren't charged for purchases they never receive, but customers who write checks that have been cashed never see their money again.

People who write checks "have to realize it's like being in Las Vegas and rolling the dice," said a Macintosh mail-order veteran who asked not to be identified. "Under Chapter 7, small creditors don't get their money back." Many Mac mail-order companies are solidly established and provide excellent service and support. But some aren't—and it can be difficult to tell the difference between a thriving company and a marginal one. The size or quality of a company's advertisements is no guarantee of great service, support, or finances, for example. So the number one consumer tip when buying by mail is *always use a credit card.*

Mail-Order Hints

Abanes started making calls about Data Link after he became dissatisfied with his purchase. The State Attorney General's Office in Austin, Texas, and the local Better Business Bureau there both reported that Data Link had failed to respond to complaints filed about the company. The number of complaints was small: three and two, respectively. A call to Apple (800/538-9696, ext. 525) showed that Data Link Resources was not an authorized dealer.

(In fact, while Apple sells its computers by mail, no other company has yet been authorized by Apple to sell Macs by mail. And most mail-order companies are more than willing to explain that to their customers. Instead, mail-order firms buy Macs from authorized Apple dealers and then resell them, a perfectly legal and profitable enterprise. Apple dealers don't always provide warranty service on mail-order Macs, however, and that's why it's important to buy from a mail-order company that can provide good customer service.)

Abanes got his information after the fact, but you don't have to wait. Investigate a company's reputation before buying by checking with local user groups, online services, and friends. The State Attorney General's Office and Better Business Bureau can sometimes be useful as well. But don't stop there. Try the tips below when buying from an unfamiliar company.

- Go elsewhere if a company will not accept credit cards. (Some people swear by C.O.D., but one reader reported that he once paid for the delivery of some bricks—instead of a CPU—via C.O.D.)

continues

ANDREW FAULKNER

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• Don't do business with a company that will charge your credit card before it ships your purchase. If a company claims it won't charge before shipping but does, cancel the order and contact your bank to dispute the entire amount. Don't forget to include any finance charges based on the order.

• Compare policies and ask several questions before you buy—when was the company founded, for instance. Age doesn't guarantee wisdom, but most mail-order companies that fail are fairly young.

Can the company track back orders? The number one mail-order complaint from readers involves delayed deliveries. Some companies track back orders and share that information with their customers.

Can you return a product without penalty? Many companies charge up to 20 percent of the purchase price as a restocking fee. A full money-back guarantee is the best policy for consumers.

What are the shipping charges? A $3 charge for shipping overnight is common for some companies; others add an insurance fee and charge by weight. A few companies will pay return shipping on a defective purchase, but most won't.

Is a Social Security number required for credit card purchases? Several companies now ask for that information in an effort to crack down on credit card fraud. Some companies believe that's the best way to fight crime, but I'm not as convinced. If you're not comfortable sharing such information, move on.

What happens if you receive defective merchandise? Some companies refer customers to manufacturers rather than replacing or fixing the product themselves.

• Do a test run. Ask technical questions before you place an order. Poor response? Better to know before you buy. If you're getting ready to place a large order from a company you've never used before, first make a small trial purchase to see how it goes. Save large orders for companies you know.

• Keep track of who said what, when. "Customers have a responsibility to keep track of the transactions they have," said reader Don H. Hockenbury of Tulsa. Hockenbury won a product rebate he was entitled to in part by documenting 22 calls made to a company. "It really doesn't take that much time to keep track of who you spoke to and what happened," he said. "And it's worth the extra buck to get a receipt showing that you mailed something back."

• Fight back tenaciously. Most Macintosh companies will work with you to resolve problems. If you do run into trouble, be polite but persistent in communicating the problem, the requested solution, and a reasonable time frame for resolution. (For more consumer advice, see *Conspicuous Consumer*, May 1991.)

A Tale of Two Perspectives

When I spoke to Sanjiv Misra, he told me his company made very little on the sale to Richard Abanes and didn't charge a shipping or configuration fee. Moreover, Misra denied he'd ever been told Abanes was having problems with his computer. Misra told me he'd done his best to help Abanes, and Misra denied that he had said Data Link was an authorized Apple dealer. "We are a mail-order company," said Misra. "We are not an authorized outlet. The reason [customers] get better deals from us is because we're a mail-order company."

In late August a *Macworld* staffer posing as a potential customer called Data Link Resources. A man who identified himself as Sanjiv returned the staffer's call. When she asked him if Data Link Resources was an authorized Apple dealer, he responded, "No, we're not an authorized Apple dealer, because we're a mail-order company." But when the staffer asked where Data Link got its computers, the man said, "We get them directly from Apple—we're an authorized retail outlet."

By late September, Richard Abanes was a satisfied PowerBook owner because Apple made an exception to its no-warranty rule on computers without original serial numbers. Apple located an authorized dealer willing to service his computer. Technicians at the Online Connecting Point store in Irvine diagnosed the faulty modem and quickly ordered a new one. Looking back, Abanes said the money he saved on his PowerBook doesn't justify the headache and hassle he encountered. His advice? Again, check up on companies before placing an order, and "always use a credit card, don't ever send a check."

To help ensure a good mail-order experience, follow the tips above. And carefully select the business you patronize. Recently *Macworld* surveyed more than 100 readers to find out which mail-order companies they recommend. Tune in next month for those results and more information on buying by mail. **m**

Research assistance by JOANNA PEARLSTEIN and GIDEON YAFFE.

Send nominees for sainthood to Service Heroes, *Macworld*, 501 Second St., San Francisco, CA 94107, or via AppleLink (Macworld1) or America Online (Branscum). Conversely, drop *Conspicuous Consumer* a line if a company is ignoring you.

Mathematica

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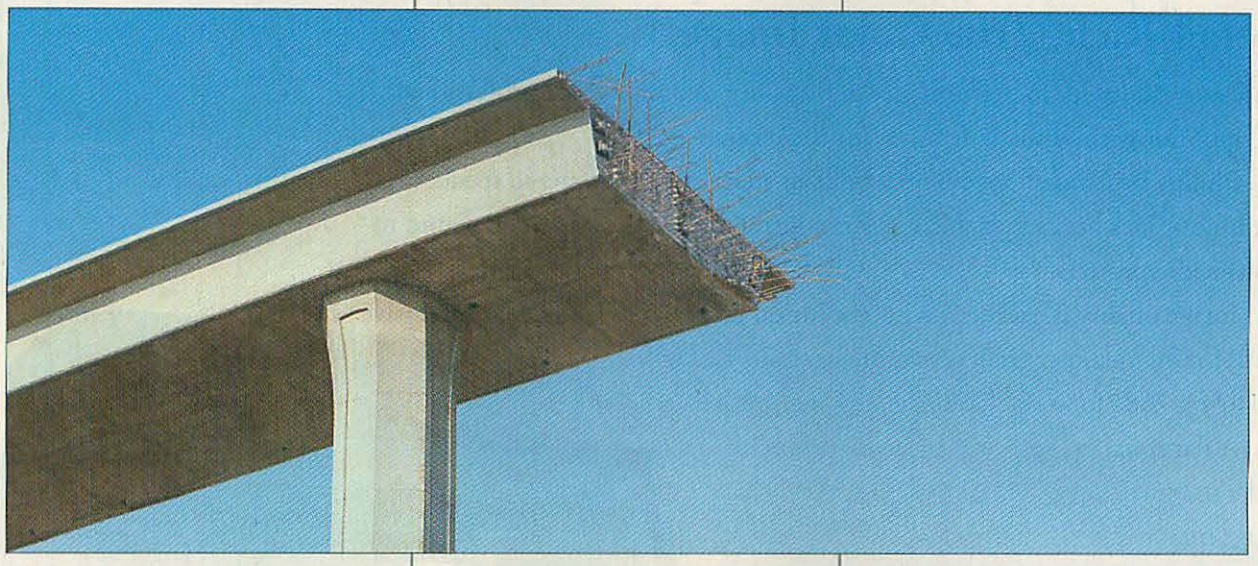

Engineers and scientists who start with other technical software programs soon reach a point they can't get past. The project isn't finished, but the software is. What can they do then but buy and learn yet another program for the next leg of the project, or return to pencil and paper to finish it out.

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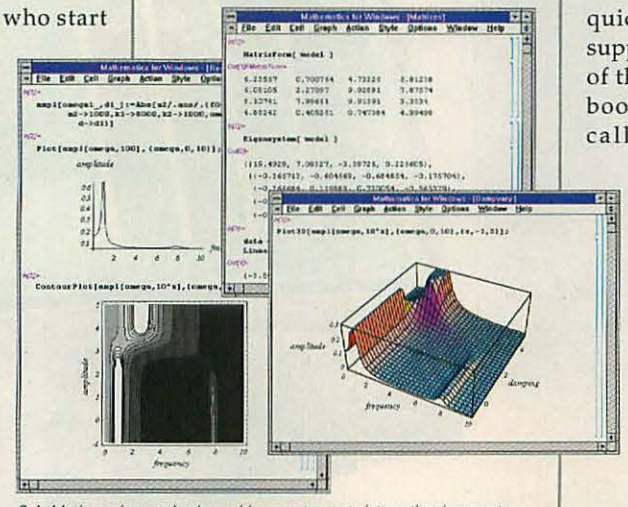

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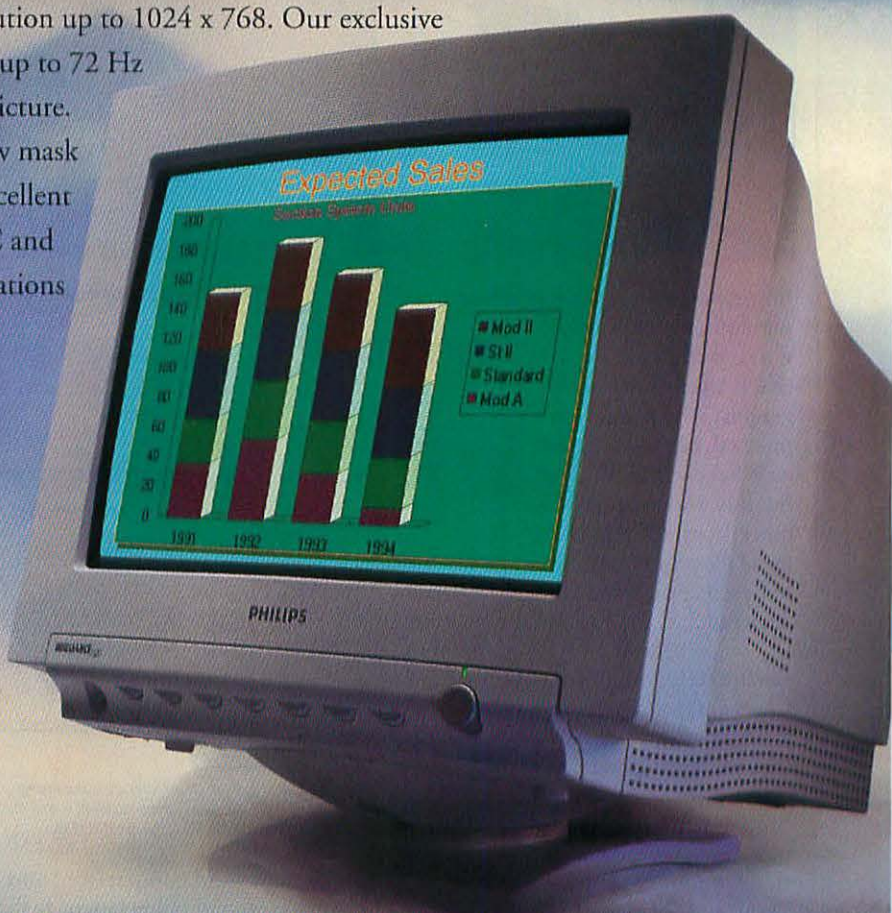

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Editors' Choice

THE BEST PRODUCTS FEATURED IN MACWORLD

Edited by Susan Grant-Marsh

Macworld Editors' Choice is a complete listing of the hardware and software products selected as the best of their type in *Macworld*'s comparative articles through the past year. A ❖ next to a product indicates that we chose more than one product in that category.

Hardware

MONITORS

BLACK-AND-WHITE MONITORS, May 93

Portrait monitor: 15-Inch Gray Scale Portrait Display; Mirror Technologies, 612/633-4450; $399, with video-display board $549.

Two-page monitor: ❖ L-View MultiMode; Sigma Designs, 510/770-0100; $1099, with video-display board $1398. ❖ MD 202 Two Page Display; Mobius Technologies, 510/654-0556; $699, with video-display board $798.

COLOR MONITORS, Oct 93

16- and 17-inch: ❖ ErgoView 17; Sigma Designs, 510/770-0100; $1349. ❖ MultiSync 5FG; NEC Technologies, 708/860-9500; $1355 (NEC's estimated dealer price).

GRAY-SCALE MONITORS, May 93

Portrait monitor: Pivot Display; Radius, 408/434-1010; $849, with video-display board $1148.

Two-page monitor: MultiMode 120, SilverView Pro; Sigma Designs, 510/770-0100; $1099, with video-display board $1299.

NETWORK HARDWARE

HARDWARE ROUTERS, Jul 93

Under $1500: EtherRoute; Compatible Systems, 303/444-9532; base model $1495 (no TCP/IP support).

Between $1500 and $3500: InterRoute/5; Farallon Computing, 510/814-5000; $3299 to $3499.

HIGH-SPEED FAX MODEMS, Oct 93

Teleport Gold and Silver with Global Fax; Global Village Communication, 415/390-8200; Gold $499, Silver $429.

POWERBOOK TOOLS

DUO DOCKING CONNECTORS, Feb 93

PowerLink DeskNet; E-Machines, 503/646-6699; $699.

EXTERNAL HARD DRIVES, Feb 93

❖ Companion 120; APS Technologies, 800/874-1428; $599. ❖ PocketDrive 120MB; La Cie, 503/520-9000; $699.

INTERNAL FAX MODEMS, Feb 93

❖ PowerModem series; PSI, 408/559-8544; $195 to $495. ❖ PowerPort series; Global Village Communication, 415/390-8200; $229 to $499.

SCSI MONOCHROME MONITORS, Feb 93

Power Portrait; Sigma Designs, 510/770-0100; $749.

PRINTERS

COLOR PRINTERS, May 93

Dye-sublimation: ❖ ColorStream/DS; Mitsubishi International, 408/980-1100; $9950. ❖ Phaser IISD Color Printer; Tektronix, 503/682-7377; $9995.

Thermal-wax: ❖ ColorScript 210; QMS, 205/633-4300; $4995. ❖ Personal ColorPoint PSE; Seiko Instruments, 408/922-5800; $2999.

Low-end liquid-ink: HP DeskWriter 550C; Hewlett-Packard, 800/752-0900; $1099.

Midrange liquid-ink: HP PaintJet XL300; Hewlett-Packard, 800/752-0900; $3495.

Solid-ink: Phaser III PXi Color Printer; Tektronix, 503/685-3585; $9995.

PERSONAL PRINTERS, SEP 93

Ink-jet: StyleWriter II; Apple Computer, 408/996-1010; $359.

PostScript laser: TI microLaser Series; Texas Instruments, 512/250-6679; $1199 to $1599.

QuickDraw laser: LaserWriter Select 300; Apple Computer, 408/996-1010; $839.

WORKGROUP PRINTERS, Jan 93

Basic printing: microLaser XL Turbo; Texas Instruments, 512/250-6679; $3649.

High-speed office printing: Pagemarq 20; Compaq Computer Corp., 713/370-0670; $5699.

Duplex printing: LaserJet IIISi; Hewlett-Packard, 800/752-0900; $6995.

SCANNERS

LOW-COST COLOR SCANNERS, Nov 93

$1300–$1600: ❖ La Cie Silverscanner II; La Cie, 503/520-9000; $1599. ❖ Hewlett-Packard ScanJet IIc; Hewlett-Packard, 800/752-0900; $1599.

Under $1300: Mirror 800 Plus Color Scanner; Mirror Technologies, 612/633-4550; $1299.

OCR, Nov 93

OmniPage Professional; Caere Corporation, 408/395-7000; $995.

SYSTEMS/STORAGE

CD-ROM DRIVES, Oct 92

High-performance: InterSect CDR-74; NEC Technologies, 708/860-9500; $712.

Budget choice: Mirror CD-ROM Drive; Mirror Technologies, 612/633-4450; $599.

DOUBLE-SPEED CD-ROM DRIVES, Jul 93

Sheer speed: Pioneer DRM-604X; Pioneer, 408/988-1702; $1795.

Overall value: AppleCD 300; Apple Computer, 408/996-1010; $599.

Budget choice: NEC MultiSpin 38; NEC Technologies, 708/860-9500; $465.

HIGH-SPEED HARD DRIVES, Aug 93

1GB drives: ❖ Edge 1000r; Saturae, 617/661-8166; $1499. ❖ MiniPak 1000; Optima Technology, 714/476-0515; $1995.

2.7GB drives: ❖ Nova XL 2700; Microtech International, 203/468-6223; $6289. ❖ Vista 3.5GB; Relax Technology, 510/471-6112; $3499.

SCSI-2 adapter: QuickSCSI; PLI, 800/288-8754; $499.

MIDRANGE HARD DRIVES, Mar 93

Low-capacity drive: La Cie Cirrus 240; La Cie, 503/520-9000; $769.

Notable technology: DiamondDrive 510; Mass Microsystems, 408/522-1200; $2089.

Bargain: APS Fujitsu 520; APS Technologies, 800/874-1428; $1149.

All-around quality: hammer 525FMF; FWB, 415/474-8055; $2799.

MACINTOSH UPGRADES, Jun 93

Classic accelerator (40MHz): TransWarp Classic; Applied Engineering, 214/241-6060; $798 (with FPU).

SE accelerator (50MHz): Gemini Integra; Total Systems, 503/345-7395; $1089 (with FPU).

SE accelerator (25MHz): Quik30; Novy Systems, 904/427-2358; $449 (without FPU).

SE/30 accelerator (50MHz or 33MHz): Universal PowerCache; DayStar Digital, 404/967-2077; 50MHz $999 (with FPU), 33MHz $449 (without FPU).

LC and LC II upgrades: Macintosh LC III Logic Board Upgrade; Apple Computer, 408/996-1010; $599.

Mac II accelerators: ❖ Radius Rocket 25i, Radius Rocket 33; Radius, 408/434-1010; 25i $1199, 33 $2499. ❖ Universal PowerCache series; DayStar Digital, 404/967-2077; $449 to $999.

IIfx SCSI accelerator: QuickSCSI; PLI, 800/288-8754; $499.

continues

MACWORLD Editors' Choice

Quadra static-RAM cache card: FastCache Quadra; DayStar Digital, 404/967-2077; $299 for Quadra 700 and 900, $449 for Quadra 800 and 950.

OPTICAL DRIVES, Dec 93
3½-inch: ❖ Epson OMD 5010; ClubMac, 800/258-2622; $959. ❖ 128 MO; APS Technologies, 800/874-1428; $899.
5¼-inch: ❖ Sharp JY-750; ClubMac, 800/258-2622; $1829. ❖ Infinity MaxOptical 11m; PLI, 800/288-8754; $4113.

TAPE DRIVES, Dec 92
Personal Backup (up to 150MB): APS Teac 155; APS Technologies, 800/874-1428; $499.
Midrange backup (150MB to 600MB): ❖ hammerTape 525; FWB, 415/474-8055; $1469. ❖ Vista 600 Tape; Relax Technology, 510/471-6112; $779.
High-capacity backup (1GB and beyond): APS Compression DAT; APS Technologies, 800/874-1428; $1699.

VIDEO/DISPLAY

24-BIT COLOR GRAPHICS BOARD, Feb 93
❖ Spectrum/24 PDQ Plus; SuperMac Technology, 408/541-6100; $1999. ❖ Thunder/24; SuperMac Technology, 408/541-6100; $2999.

COLOR LCD PROJECTION, Jan 93
Display panel: MediaPro; nView Corp., 804/873-1354; $7995.
Low-end panel: TFT Rainbow HD Model 700; Chisolm, 408/559-1111; $5295.
Complete LCD projector: System 6000; In Focus Systems, 503/692-4968; $8495.

VIDEO-CAPTURE BOARD, Jan 93
VideoSpigot; SuperMac Technology, 408/541-6100; $449 to $1399, depending on bundling options.

Software

ACCOUNTING/FINANCE

GROWING A SMALL BUSINESS, Nov 93
Small-Business System: M.Y.O.B.; Teleware, 201/586-2200; $199.
Home Office/Personal Finance: MacMoney; Survivor Software, 310/410-9527; $119.95.

NETWORK/MULTIUSER ACCOUNTING, Nov 92
❖ Flexware II; Flexware, 916/581-6999; $695 to $895 per module. ❖ Great Plains Accounting; Great Plains Software, 701/281-0550; $795 per module.

PERSONAL FINANCE, Jun 93
❖ CheckWriter 4.0; Aatrix Software, 701/746-6801; $79. ❖ Andrew Tobias' Managing Your Money 5.0; MECA Software, 203/256-5000; $79.95.

SINGLE-USER ACCOUNTING (WITH PAYROLL), Nov 92
Checkmark MultiLedger and Payroll; CheckMark Software, 303/484-3541; $395.

SINGLE-USER ACCOUNTING (WITHOUT PAYROLL), Nov 92
M.Y.O.B.; Teleware, 201/586-2200; $199.

BUSINESS TOOLS

STATISTICS, Oct 93
Exploratory data analysis: DataDesk 4.1; Data Description, 607/257-1000; $595.
Comprehensive package: SYSTAT 5.2.1; SYSTAT, 708/864-5670; $895.

COMMUNICATIONS/NETWORKS

HIGH-SPEED FAX MODEM SOFTWARE, Oct 93
Faxstf; Telefocus, 816/886-9800; $79.

NETWARE CONNECTIVITY, Sep 93
NetWare for Macintosh; Novell, 801/429-7000; $495 for 5-user license to $2295 for 200-user license.

NETWORK MANAGEMENT, Feb 93
Network SuperVisor; CSG Technologies, 412/471-7170; $495.

NETWORK DIAGNOSTICS, Feb 93
Ethernet: EtherPeek; AG Group, 510/937-7900; $795.
LocalTalk: LocalPeek; AG Group, 510/937-7900; $495.

SOFTWARE ROUTER, Jul 93
Apple Internet Router 3.0; Apple Computer, 408/996-1010; Basic Connectivity Package $499.

TERMINAL EMULATOR, Oct 93
VersaTerm; Synergy Software, 215/779-0522; $149.

GRAPHICS

2-D CAD, Jan 93
Low-end: BluePrint; Graphsoft, 410/461-9488; $295.
Midrange: PowerDraw; Engineered Software, 919/299-4843; $795.

3-D DESIGN, Aug 93
Price for performance: ❖ Ray Dream Designer 2.0.4; Ray Dream, 415/960-0765; $299. ❖ Alias Sketch 1.5; Alias Research, 416/362-9181; $995.
All-in-one solution: ❖ Infini-D 2.5; Specular International, 413/549-7600; $995. ❖ StrataVision 3D 2.6.1; Strata, 801/628-5218; $995.

DRAWING PROGRAMS (LOW-COST), Sep 93
Budget draw: Expert Draw; Expert Software, 305/567-9990; $49.95.
Budget draw/paint: UltraPaint; Deneba Software, 305/596-5644; $79.

Vendors: Please write to Macworld Editors' Choice, 501 Second St., San Francisco, CA 94107, or send a fax to 415/442-0766 to inform us of changes in your phone number or your product's list price.

Beginners' program: Aldus SuperPaint; Aldus Corp., 619/558-6000; $149.95.
Overall: Canvas; Deneba Software, 305/596-5644; $399.

IMAGE DATABASES, Oct 93
❖ Aldus Fetch 1.0; Aldus Corp., 206/628-5739; $295. ❖ Multi-Ad Search 2.0; Multi-Ad Services, 309/692-1530; $249.

PAINT AND IMAGE-EDITING, Sep 93
Budget buy: Expert Color Paint; Expert Software, 305/567-9990; $49.95.
Overall program: Fractal Design Painter; Fractal Design Corp., 408/688-8800; $399.
Image-editing program: Adobe Photoshop 2.5.1; Adobe Systems, 415/961-4400; $895.

ORGANIZATION/PRODUCTIVITY

CALENDARS, Jul 93
Alarm system: ❖ First Things First; Visionary Software, 503/246-6200; $79.95. ❖ Smart Alarms Plus; JAM Software, 203/630-0055; $75.
All-around scheduler: Now Up-to-Date; Now Software, 503/274-2800; $99.
Meeting scheduler: Meeting Maker; On Technology, 617/374-1400; five-pack $495.

INSTITUTIONAL MEMORY, Dec 93
Small system: On Location; On Technology, 617/374-1400; $129.
Multiuser system: Personal Librarian; Personal Library Software, 301/990-1155; $995.

PERSONAL INFORMATION MANAGEMENT, Feb 93
TouchBase/DateBook; After Hours Software, 818/780-2220; $169.95.

SALES-AUTOMATION SOFTWARE, Oct 93
❖ Contact Ease; WestWare, 619/660-0356; one user $395, five users $1495. ❖ CBS; Colleague Business Software, 512/345-9964; $495.

PRESENTATION TOOLS

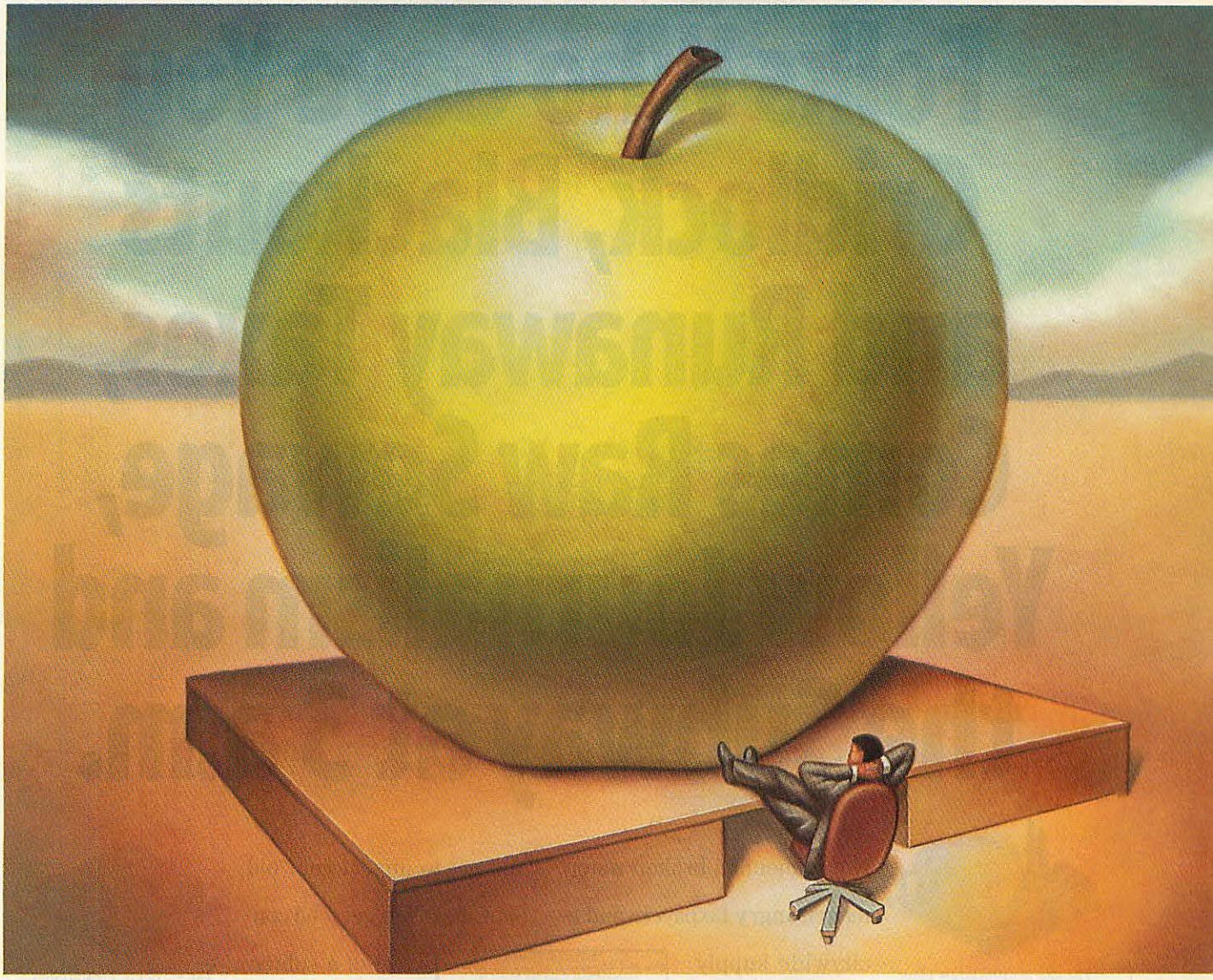
MULTIMEDIA AUTHORING, Mar 93
Entry-level: ❖ Action; Macromedia, 415/252-2000; $495. ❖ Passport Producer; Passport Designs, 415/726-0280; $495.

UTILITIES

PRINTING, Sep 93
PC-printer cable packages: PowerPrint; GDT Softworks, 604/291-9121; $149.

SECURITY, Feb 93
File encryption and erasure: Citadel with Shredder; Datawatch Corp., 919/549-0711; $99.95.
Full-featured security: ultraSecure; usrEZ Software, 714/756-5140; $239.
Low-cost security: PassProof; Kensington Microware, 415/572-2700; $64.95. m

Hewlett-Packard® suggests you look beyond the obvious for your next Mac printer.



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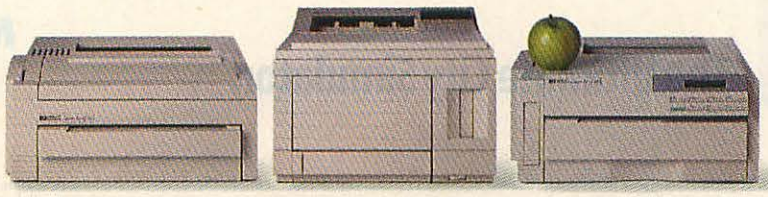

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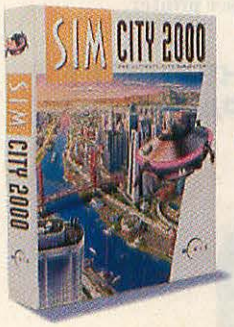

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Star Ratings

OVER 350 HARDWARE AND SOFTWARE REVIEWS AT A GLANCE

Edited by Wendy Sharp

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Vendors: Please write to *Macworld Star Ratings*, 501 Second St., San Francisco, CA 94107, to inform us of changes in the version number or list price of your product, or of changes to your phone number.

★★★★★ Best ... ★ Worst

Software

BUSINESS TOOLS

★★★ **4D Server 1.0.1, ACI US, 408/252-4444, $1495 to $3495.** Database server uses the ingenious multitasking technology built into 4D to make it appear that each client has the full resources of the server. If you use 4D on a network, you need this product. Jun 93

★★★★ **4th Dimension 3.0.1, ACI US, 408/252-4444, $895.** Multitasking, which greatly improves speed, makes this upgraded relational database delightful for both developers and end users. For a relational database, it's impressively easy to use. Apr 93

★★ **AccuZip6 1.5.2, Software Publishers, 714/846-1908, $899.** Professional-level mail-list management tool on CD-ROM is the most comprehensive system available, but its inexcusable user-interface violations make our reviewer reluctant to recommend it. May 93

★★★ **Acrobat Exchange, Acrobat Distiller, Adobe Systems, 415/961-4400, $195 to $2495.** Complete, well-planned paperless office system creates application-independent viewable files that can be readily distributed on a network. Still, it's not yet as inexpensive or as convenient as you might wish. Oct 93

★★★ **@Risk 1.1, Palisade Corp., 607/277-8000, $395.** Statistical simulator for Microsoft Excel financial computations generates complex, statistically valid templates within Excel and is the first choice for analysts who work with probabilistic models every day. It assumes that the user is an Excel power user. Aug 93

★★★★ **ClarisWorks 2.0, Claris Corp., 408/727-8227, $299.** Integrated program sets the standard. It provides more features, is easier to use and faster, and has better integration among modules than other available programs. Aug 93

★★★★ **Common Ground 1.0, No Hands Software, 415/321-7340, $189.95.** Simple, robust document interchange system is the clear choice for modest document-distribution jobs. In tests, it worked easily with documents from many different applications. Oct 93

★★ **EasyFlow 1.1, HavenTree Software, 613/544-6035, $229.** The rough edges and distinctly un-Mac-like attributes of this flowcharting software reflect its DOS heritage, but on the whole it's easy to use. Sep 93

★★★★ **FileMaker Pro 2.0, Claris Corp., 408/727-8227, $399.** Easier scripting, improved mailing labels and text-handling, and support for QuickTime and Apple events are the major new features of this upgraded, multiuser, flat-file database. Although it has some minor bugs, this is a strong upgrade to an excellent program. Jan 93

★★★ **FlowChart Express 1.0 (1.01), Kaetron Software Corp., 713/890-3434, $149.** Inexpensive, easy-to-use flowchart software meets the needs of most flowchart creators, although those with extensive requirements will need a larger, more powerful feature set. Jan 93

★★★ **Helix Express 1.0, Helix Technologies, 708/205-1669, $439.** This relational database has an iconic programming language that sometimes baffles programmers, but provides an easy route into basic data-handling for nonprogrammers. Helix Express is still the ultimate in multiuser simplicity for relational databases. Jul 93

★★★ **Helix Tracker 1.0, Helix Technologies, 708/465-0242, $439.** Well-designed workgroup-document manager has strong audit and annotation features; imposes just the right amount of administrative discipline. For large documents, however, Ethernet will look mighty attractive. Nov 93

★★★ **ithink 2.2.1, High Performance Systems, 603/643-9636, $695.** Although it requires a real training commitment for effective use, this product is an attractive dynamic business modeling system. It's a good bet for identifying cloudy spots in the crystal ball. May 93

★★ **Lotus Notes 3.0, Lotus Development Corp., 617/577-8500, $495 per client.** Well-organized, robust, and flexible business data system demands a full-time administrator, preferably with considerable programming experience, for effective use. Sep 93

★★★ **MacBarcoda 2.24, ComputaLabel, 508/462-0993, $349 to $895.** Simple-to-use desk accessory creates bar codes in EPS or Adobe Illustrator 1.1 format. DA cannot automatically create serial codes. Jun 93

★★★ **MacProject Pro, Claris Corp., 408/727-8227, $599.** If you're working on a midsize project and like using PERT charts, this may be the project-management software for you. However, the multistep scheduling process and the limited integration between charts are frustrating if you prefer Gantt charts. May 93

★★★★ **MarcoPolo 2.0, Mainstay, 805/484-9400, $395.** Inexpensive, easy-to-use product allows you or your workgroup to archive and retrieve documents, whether in electronic or paper form. Queries are easy to construct and searches are handled quickly. Sep 93

★★★ **Market Master Manager 3.5, Breakthrough Productions, 916/265-0911, $595.** Sales-automation software is designed to keep track of contacts, generate mailings, and make sure that leads don't fall through the cracks. It includes a remote module, but it has some odd user-interface features. Oct 93

★★ **Memorizer 2.0, Brains Software Engineering, 432-231-28973 (Austria), $100.** Software records dictation, and you transcribe the dictation in a word processor. You may prefer to stick with a hand-held tape recorder, considering the product's RAM and storage appetite, and its propensity to crash. Aug 93

★★★ **Micro Planner Manager 1.1, Micro Planning International, 303/757-2216, $695.** When you require cross-project resource sharing and leveling, for a reasonable price, this project-management software has the edge. It has a generally intuitive interface, though there's a steep learning curve for its advanced features. Nov 93

★★★★ **Microsoft Excel 4.0, Microsoft Corp., 206/882-8080, $495.** Create impressive spreadsheets with this upgrade that includes all the features you wished for and more. It's slower, and needs 2MB of RAM for practical use, but almost all users will want to upgrade. Oct 92

★★★★ **Microsoft Project 3.0, Microsoft, 206/882-8080, $695.** An amazing range of functions, including new scheduling and formatting, are packed into this project-management software. The improved tool bar helps novices schedule tasks with push-button ease. Jan 93

★★★ **Microsoft Works 3.0, Microsoft, 206/882-8088, $249.** Capable upgrade delivers marginally improved functionality and a welcome face-lift to this integrated program, but there are a number of incompatibilities, odd design choices, and performance flaws. Feb 93

★★★★ **nuBase Pro 1.5 (1.7), Tactic Software Corp., 407/832-1400, $395.** Although still slower than FoxBase and without the rich feature-set of 4th Dimension, this is the only relational database that makes it possible for users with no programming experience to design a useful database. Sep 92

★★★ **Omnis 7 1.1, Blyth Software, 415/312-7100, $1250.** The plain, businesslike functionality of this database-development system produces solid applications without much fuss. Dec 92

★★★ **OrgChart Express 1.0, Kaetron Software, 713/890-3434, $279.** Organization-chart

continues

MACWORLD Star Ratings

software links a database to standard box-drawing functions. Although the learning curve is steep, the effort may be worth it for people who regularly work with large or complex organization charts. Apr 93

★★★★ **Panorama 2.0 (2.1), ProVue Development Corp., 714/892-8199, $395.** Disarmingly easy-to-learn flat-file database is full of labor-saving data entry features, plus it boasts a remarkable macro function that lets you record and play back almost any series of database routines. May 92

★★★★ **Project Scheduler 5, Scitor Corp., 415/570-7700, $695.** For most midrange project-planning, this program's many hits outweigh its few misses. It goes beyond the requisite scheduling options, with inflation factors and unlimited projects in memory, and it conforms to accepted standards, so you get consistent, predictable results. Aug 93

★★★ **SpreadBase 1.0.1, Objective Software, 415/306-7410, $695.** Business data-analysis tool is a unique combination of database and spreadsheet functions. It's worth a close look for power users, despite meager documentation and a cranky macro language. May 93

★★★ **Wingz 1.1ae, Informix Software, 913/599-7100, $399.** If you want a low-overhead spreadsheet with advanced-math functionality, this is an attractive product. What you get is a competent calculating engine with superior charts; what you miss is outlining, real 3-D spreadsheet linking, and the host of third-party add-ons offered for Microsoft Excel. Jul 93

★★★ **WordPerfect Works 1.2, WordPerfect Corp., 801/225-5000, $249.** This program offers seven well-integrated and flexible modules. It has a few shortcomings, including some memory-management problems, but buyers should generally be pleased. Jun 93

COMMUNICATIONS/NETWORKS

★★★ **CompuServe Information Manager 2.0.1, CompuServe, 614/457-8600, $49.95.** The goal of this product is to give friendlier information-access to CompuServe for Macintosh users. An appealing color interface and increased speed are signs of success, but there's still room for improvement. Dec 92

★★★★ **MicroPhone Pro, Software Ventures Corp., 510/644-3232, $295.** Truly comprehensive telecommunications package now includes send-and-receive fax software. Although the new TCP/IP tools are complicated, the documentation is clear and precise. Apr 93

★★ **NetVirtual 2.0, Eclectec, 408/462-2040, $995 to $4985.** One-of-a-kind network-simulation product favors flexibility at the expense of usability. Only after hours of work will your simulation report anything meaningful about your network, and even then the results are difficult to analyze. Apr 93

★★★ **Network Vital Signs 1.0 (1.1), Dayna Communications, 801/531-0600, $449.** Fault-monitoring application continually watches selected network devices, monitoring for specific errors. Unfortunately, when monitoring more than ten devices, it noticeably degrades the performance of the monitoring Mac. Mar 93

★★★ **On the Air 1.0.1, Digital Eclipse Software, 510/547-6101, $79.99 to $639.99.** Intercom system transmits System 7 SND resources, SoundEdit, and AIFF sound files across a network. It's well designed and performs decently, but its usefulness seems limited. Aug 93

★★ **SoftPC with Windows, Insignia Solutions, 415/694-7600, $499.** The emulation of a complete and accurate Windows environment on a Mac is an amazing accomplishment, but the product is so slow, even on a Quadra, that it performs in what might best be characterized as a dreamlike languor. Jun 93

★★★★ **TechWorks Net Utilities 1.0, Technology Works, 512/794-8533, $129.** Collection of five applications provides essential network-monitoring tools at a price that would please anyone. Dec 92

★★★★ **Timbuktu 5.0.1, Farallon Computing, 510/814-5000, $199 to $5500.** By letting one computer (a Mac or a Windows-based PC) control, observe, or exchange data with another computer, this terminal-emulation product allows you to use resources almost anywhere on a network. Mar 93

DESKTOP PUBLISHING

★★★★ **Aldus Fetch 1.0, Aldus Corp., 206/622-5500, $295.** The rich feature set and network support of this image-cataloging software make it a clear winner. Although cataloging is slow, users have fine control of the depth and compression of thumbnails. Aug 93

★★★★ **Aldus PageMaker 5.0, Aldus Corp., 206/622-5500, $895.** Desktop publishing software has added the features, both great and small, that it's been lacking, while still retaining the ease-of-use advantages that it's always had. This is a superb upgrade. Nov 93

★★ **Aldus Personal Press 2.0, Aldus Corp., 206/628-2320, $199.** Basic, inexpensive page-layout program gains strength, but is still missing elements that novice users need, such as automatic kerning. Its software-knows-best approach to copyfitting makes manual fine-tuning difficult and is likely to confuse beginners. Mar 93

★★★ **Apple Font Pack, Apple Computer, 408/996-1010, $99.** Apple's first collection of TrueType fonts includes only 12 fonts that haven't been available since the late eighties in the PostScript format. Still, it's not a bad deal, considering that Adobe PostScript fonts cost four times as much. Mar 93

★★★ **Cumulus 1.1, Canto Software, 415/431-6871, $295.** Good network support, plus a feature that creates a protocol file for recording user actions, make this image-cataloging program a good choice for workgroups. It doesn't have an image preview feature, or offer 32-bit thumbnails. Aug 93

★★★ **Expanded Book Toolkit 1.0.1, The Voyager Company, 310/451-1383, $295.** Using this hypermedia publishing program, average mortals can create highly functional multimedia books in a fraction of the time it would take to do the job unassisted. Be aware, though, that it's no QuarkXPress. Jun 93

★★★★ **FontMonger 1.5.7 (1.5.9), Ares Software Corp., 415/578-9090, $149.95.** Font-conversion utility provides cross-platform, cross-font conversion and makes it easy to create composite, subscript, superscript, and rotated characters. Sep 93

★★ **ImageAccess 1.0, Nikon, 516/547-4355, $495.** This expensive image-cataloging program has an unusual interface and cannot be used over a network. A plug-in module provides direct support for Nikon's LS-3510AF film scanner. Aug 93

★★★ **Kodak ColorSense 1.0, Eastman Kodak, 716/253-0740, $499.** Color-management system gives average users access to a reasonable level of color consistency at a reasonable price. It does not make color separations. Oct 93

★★ **Kudo Image Browser 1.0, Imspace Systems Corp., 619/272-2600, $295.** This image-cataloging software cannot control thumbnail depth or compression, and doesn't have a keyword feature or allow multiple users to access the catalog simultaneously. The unique Riffle feature lets you quickly scan images. Aug 93

★★★ **Lazy Dog Foundry Personal Font, Lazy Dog Foundry, 612/291-0306, $199.99 to $499.99.** Type 1 font made from your handwriting has clean, even lines—whether or not your writing does. Apr 93

★★★ **Personal Font, Signature Software, 503/386-3221, $179.95.** Turn your handwriting into a PostScript Level 3 or a TrueType font. The results are good, although not perfect. Dec 92

★★★ **Publish It Easy 3.0, Timeworks, 708/559-1300, $199.95.** Desktop-publishing program offers writing, editing, formatting, page-layout, drawing, and painting tools with well-thought-out interface innovations, plus an excellent database manager. Unfortunately, the program is unstable and crash-prone. Mar 93

★★★★ **QuarkXPress 3.2, Quark, 303/894-8888, $895.** This upgrade adds the EfiColor XTension to ensure the greatest possible fidelity of color images and is a must-have for professional color publishers who use Quark. For others, the enhancements are welcome but minor enough that they provide little incentive to upgrade. Nov 93

★★★ **Renaissance 1.0, Eastman Kodak, 800/433-2839, $695.** A strange mixture of power and oversight, this page-design and -layout software provides several slick features, but blatantly ignores Mac conventions. Dec 92

★★★★ **Spectacular 1.2, FontHaus, 203/846-3087, $59.** Keep track of fonts efficiently and effectively with this type-specimen generator. Printing specimen sheets is a cinch. Jan 93

★★★★ **SuperATM, Adobe Systems, 415/961-4400, $149.** This upgrade to Adobe Type Manager lets you view Adobe-brand PostScript fonts on screen and output them at high resolutions, even when the corresponding printer fonts are unavailable. Although it has limitations, this is an outstanding advance in font technology and a tremendous value. May 93

EDUCATION

★★★★ **Algebra, Broderbund Software, 415/382-4400, $89.95 to $99.95.** Interactive, imaginative math tutorial is keyed to the standard textbook order of topics, but offers much more. It is particularly strong on word problems and graphing. May 93

★★★ **The Castle of Dr. Brain 1.0, Sierra On-Line, 209/683-4468, $49.95.** Use logic and raw brain-power to navigate rooms, mazes, and hallways. Puzzles range from mundane to creatively laborious. Dec 92

★★ **Comprehensive Review in Biology, Queue, 203/335-0908, $295.** There isn't a textbook publisher in North America with the nerve to publish a black-and-white biology book with nothing more than text and basic line drawings, much less charge several hundred dollars for it, but that, in effect, is what this CD-ROM is. May 93

★★★ **Compton's Multimedia Encyclopedia 1.00M, Compton's New Media, 619/929-2626,**

continues

MAC PACKAGE

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MACWORLD Star Ratings

$795. The down-to-earth writing style and numerous bells and whistles of this multimedia encyclopedia on CD-ROM appeal to younger readers, but the high cost and sluggish performance may be prohibitive. Apr 93

★★★★ **Decimal & Fraction Maze 1.2, Great Wave Software, 408/438-1990, $69.95 to $89.95.** Education software weaves the threads of eight math curricula—from third grade to eighth, along with two levels of adult education—into an interesting and visually stimulating game. Jul 93

★★ **Dvorak on Typing 1.0, MacPlay, 714/553-3530, $49.95.** Typing tutor offers solid lessons, but the small annoyances, such as never being able to take intermediate or advanced lessons without first passing a test, add up. Jun 93

★★★ **Headline Harry and the Great Paper Race 1.0, Davidson & Associates, 310/793-0600, $59.95.** Travel through time and across the country as a journalist in this history/geography game. While not an educational masterpiece, it is lots of fun. Dec 92

★★★ **MacGlobe 1.3.0, Brøderbund Software, 415/382-4400, $44.95.** Besides maps and bits of fun, such as national anthems, this geography software offers an impressive quantity of demographic and economic information. Its data export could use some work. Feb 93

★★★★ **Mavis Beacon Teaches Typing 2.0, The Software Toolworks, 415/883-3000, $49.95.** If being entertained while learning to type interests you, this typing tutor provides varied environments, interesting lessons, and good games. Jun 93

★★★ **Millie's Math House, Edmark Corp., 206/556-8400, $49.95.** Math-education software provides ways for preschoolers to experiment with numbers and counting. It's engaging, but more advanced levels would keep children challenged longer. Jul 93

★★★★ **The New Grolier Multimedia Encyclopedia, Grolier Electronic Publishing, 203/797-3530, $395.** The scholarly text of this encyclopedia on CD-ROM is suitable for sophisticated readers, while its speed, ease of use, and value are impressive. Apr 93

★★ **NihongoWare, Vol. 1, Qualitas Trading Company, 510/848-8080, $349.** Although this Japanese language CD-ROM offers solid instruction, it's so expensive and so limited in its word selection that it's not an economical choice for individual users. Jan 93

★★ **The Secret Codes of C.Y.P.H.E.R. 1.0 (1.1), Tanager Software Productions, 510/430-0900, $59.95.** Intriguing facts about mammals and a variety of alphabets provide the interest in this educational game, but the inescapable, repetitive animations are a major detraction. Apr 93

★★★ **The Secret Island of Dr. Quandary 1.0 (1.01), MECC, 612/569-1500, $49.95 to $69.95.** Clever package of gorgeous landscapes, catchy sounds, and tempting arcade-game puzzles uses math, logic, and reading skills. Although slow, it's fun for parents and kids. Jun 93

★★★ **Stickybear's Reading Room 2.2a, Optimum Resource, 803/785-7441, $59.95.** Educational game with four activities takes a sedate but direct path to building primary-level reading skills. Jun 93

★★★★ **Where in America's Past Is Carmen Sandiego? 1.0 (1.3), Brøderbund Software, 415/382-4400, $44.95.** Travel in time and the U.S. chasing those V.I.L.E. crooks in this clever educational history/geography game that's challenging for all ages. Mar 93

ENTERTAINMENT

★★★★ **A-Train, Maxis, 510/254-9700, $69.95.** Charming railroad simulation offers astonishing, and often witty detail, but the learning curve is high and the interface isn't completely Mac-like. Apr 93

★★ **America Alive, MediaAlive/CD Technology, 408/752-8500, $99.** QuickTime movies, photographs, maps, text, and audio mingle in this multimedia CD-ROM guide to the U.S. It's a promising concept, but it doesn't yield much useful information. Mar 93

★★★★★ **Arthur's Teacher Trouble, Brøderbund Software, 415/382-4400, $59.95.** Every page of this delightful animated book is dense with surprises that arouse and satisfy a child's curiosity. In the words of six-year-old Alex, "It's like chocolate ice cream. You can have it more than once and it's still good." Apr 93

★★★ **Battle Enhanced Chess CD ROM, Interplay Productions, 714/553-6678, $79.95.** Elaborately detailed cartoon characters act out little dramas of strategy and capture, complete with sound effects, in this chess game that will drive nine-year-olds mad with glee but may annoy experienced chess players. Mar 93

★★★ **The Battle of Britain, Deadly Games, 215/295-2284, $39.95.** It's August 10, 1940. The badly outnumbered British must defend their country against the invading Luftwaffe, and you're in charge. Although the graphics and sound are not spectacular, this is an entertaining, thinking person's game. Dec 92

★★★ **BlackJack Trainer, ConJelCo, 412/492-9210, $75.** Learn the strategies you need to win at blackjack with this program. There are a number of trivial bugs, but they won't get in the way. Oct 93

★★★ **Cogito 1.0, Inline Design, 203/435-4995, $59.95.** Rubik's Cube fans will like this challenging game where the goal is to replicate a pattern by moving rows and columns of tiles. It gets more and more complex as you progress through the 120 levels. Apr 93

★★★ **Daily Sports Quiz 1.0, DreamTime, 619/236-1341, $49.95.** If you think you know a lot about sports and love to play trivia games, then this entertaining and informative game is for you. Each time you start up your Mac, three sports trivia questions from eight different categories appear on your screen. Oct 93

★★★★ **Go Master 5, Toyogo, 802/464-5526, $69.** Go has been called the most interesting board game ever invented. This excellent software version incorporates helpful learning aids and sample games. Dec 92

★★★★ **Hellcats Over the Pacific 1.0.3, Graphic Simulations, 214/699-7400, $69.95.** Fly a WWII-era Navy fighter, the Grumman F6F Hellcat, against enemy planes in the South Pacific with this flight simulator that offers smooth graphics, good special effects, and great documentation. Apr 93

★★★ **Indiana Jones and the Fate of Atlantis, LucasArts Games, 415/721-3300, $59.95.** In this game, the whip-wielding archaeologist goes looking for Atlantis and finds it armed to the gills with magical technology and Nazi stooges. If you're not bothered by the story's astonishing sexism, you'll find it diverting. Oct 93

★★★★ **Insanity 1.0, UV Wave, 318/868-9944, $39.95.** Shoot your Mac with this cool control panel device that offers a choice of nine weapons, ranging from an Uzi to a pigeon. It has first-rate sound effects and detailed animation, but the novelty wears off. Feb 93

★★★★ **Jewelbox 1.5, Varcon Systems, 619/563-6700, $49.95.** This gem of a game is strongly reminiscent of Tetris. The jewels fall into rows that disappear when you place three jewels of a kind together. Jun 93

★★★ **The Journeyman Project, Presto Studios, 619/689-4895, $99.95.** Interactive science-fiction epic on CD-ROM is a work of art. The scenes are rich with painstakingly detailed graphics, elaborate models, and subtle textures, but the sluggish pace may leave you impatient and bored. Sep 93

★★★★ **Maelstrom 1.03, Ambrosia, P.O. Box 23140, Rochester, NY 14692-3140, $15 plus $5 shipping and handling.** Fast-paced arcade game is loosely modeled after Asteroids, the Atari classic. Maelstrom features superb animation, hilarious sound effects, exciting action—and best of all, it's shareware. Jun 93

★★★★ **Monkey Island 2: LeChuck's Revenge, LucasArts Games, 415/721-3394, $59.95.** This whimsical Twilight Zone of life on the high seas is the adventure-game equivalent of *Mad* magazine, filled with witheringly sarcastic dialogue, splendid gross-out jokes, heapings of self-parody, and enough hilarious detail to keep you amused for days. May 93

★★★ **Mozart: The "Dissonant" Quartet, The Voyager Company, 310/451-1383, $59.95.** This CD-ROM includes an unusual essay on stringed instruments, discussions of general musical concepts, an analytical overview of the quartet, and a taped minilecture on Mozart's life, but the music is limited almost entirely to the title piece. Apr 93

★★ **The Orchestra: The Instruments Revealed, Time Warner Interactive Group, 818/955-9999, $79.98.** The many-branched, interwoven, hypertext style of this music-education CD-ROM makes it hard to navigate and digest, despite its richness. For the price, other music-education CD-ROMs present better values. Apr 93

★★★★ **Poetry in Motion, The Voyager Company, 310/451-1383, $29.95.** Performance videos of contemporary poets are juxtaposed with the texts of their poems and taped interviews in this intriguing CD-ROM that combines the excitement of the stage with the reflective appeal of the page. Feb 93

★★★★ **Richard Strauss: Three Tone Poems, The Voyager Company, 310/451-1383, $59.95.** *Don Juan, Till Eulenspiegel,* and *Death and Transfiguration* are included in this CD-ROM. The musical analysis is satisfying, and the lush orchestral music will appeal to both novice and experienced classical music listeners. Apr 93

★★★ **Rodney's Wonder Window, The Voyager Company, 310/461-1383, $39.95.** Collection of 23 colorful, wacky graphics and animations by Rodney Alan Greenblat is charming but uneven. While some modules are elaborate and sophisticated, others are simple and not particularly interesting. Mar 93

★★★ **Schubert: "The Trout" Quintet, The Voyager Company, 310/451-1383, $59.95.** Alan Rich, classical music commentator for NPR, conveys his enthusiasm for this appealing music in this CD-ROM's lively text. However, the discussion is relatively unchallenging and the musical performance is not at the top of most reviewers' lists. Apr 93

★★★★ **Seven Days in August, Time Warner Interactive Group, 818/955-9999, $79.99.** Compelling, interactive documentary on CD-ROM cuts a slice

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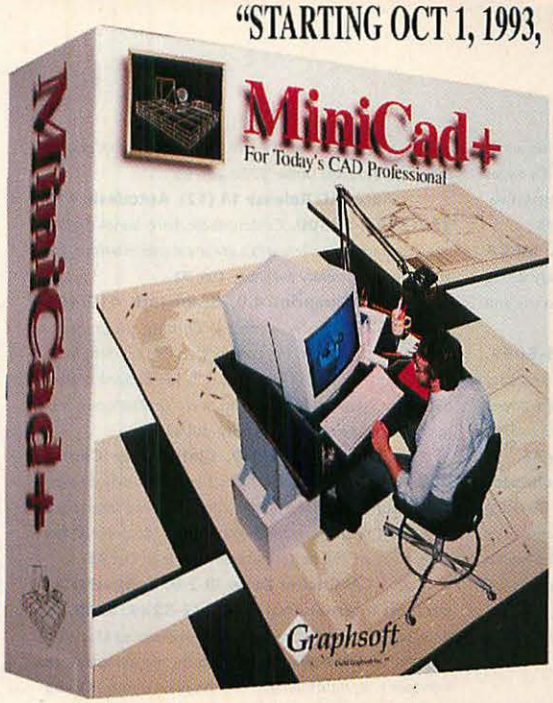

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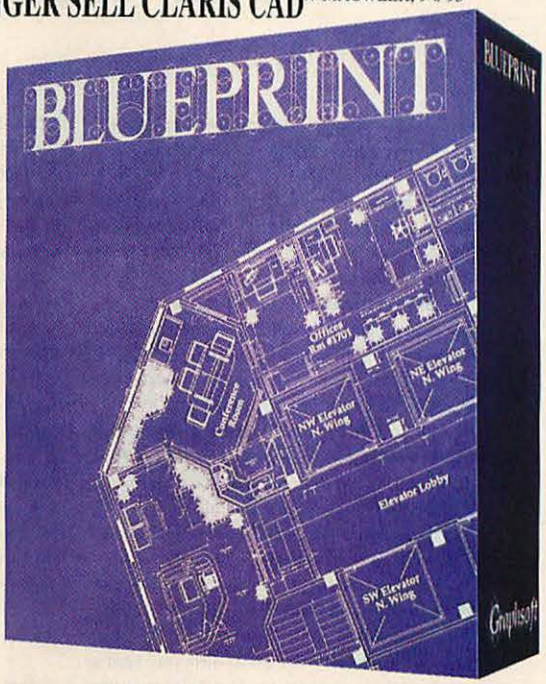

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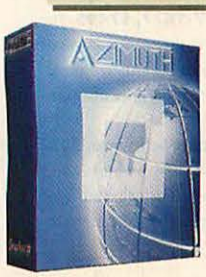

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MACWORLD Star Ratings

from history and offers August 10 through August 16, 1961, (the building of the Berlin Wall) to viewers in a way that truly evokes the period. Oct 93

★★★ **Sherlock Holmes, Consulting Detective, Volume II, Icom Simulations, 708/520-4440, $69.95.** Match wits with the legendary detective by solving three difficult mysteries in this CD-ROM game. May 93

★★★ **SimLife, Maxis, 510/254-9700, $69.95.** A megalomaniac's dream come true, this amazingly intricate simulation lets players create and control ecosystems. It's not easy, but the reward is an increased understanding of the complex interrelationships of life. Feb 93

★★★★ **So I've Heard, Volume 1: Bach and Before, The Voyager Company, 310/451-1383, $24.95.** Engaging text describes nearly two millennia of western music (up to the mid-eighteenth century) in this CD-ROM. It offers a unique opportunity to sample 50 or so performances, styles, and compositions. Feb 93

★★★ **Space Quest 1: Roger Wilco in the Sarien Encounter, Sierra Online, 209/683-8989, $19.95.** As Roger Wilco, starship janitor, you must defeat the evil Sariens in this adventure game where your head is more important than your hands. For most players the game will be easy to complete. Apr 93

★★★ **Super Mines 1.0, Callisto Corp., 508/655-0707, $49.95.** You use logic to search a minefield without setting off mines in this fast-paced game that's easy to learn, but offers 84 levels for long playability. Apr 93

★★★ **V for Victory: Utah Beach, Three-Sixty Pacific, 408/879-9144, ext. 23, $69.95.** The post–D-Day conquest of Normandy is re-created in this game; its strength is the way it blends easy play with complicated strategy. Some bugs exist. Oct 93

★★★ **Warlords, Strategic Studies Group, 904/494-9373, $49.95.** A medieval fantasy world is the setting for this colorful game of strategy and conquest with beautiful graphics. Unfortunately, the computer opponents are not challenging enough for an experienced war-gamer, although human opponents may be. Dec 92

★★★★ **Who Killed Sam Rupert, Creative Multimedia Corp., 503/241-4351, $39.99.** You're a police detective trying to solve the murder of a popular restaurateur in this interactive CD-ROM that exploits the full range of multimedia options and provides a wealth of clues and surprises to hold your interest. May 93

FINANCE/ACCOUNTING

★★ **Andrew Tobias' TaxCut for Macintosh, MECA Software, 203/256-5000, $79.95.** The occasionally awkward interface of this personal tax-preparation software doesn't follow every Mac standard, but the help system is very good. State versions are available for California and New York. May 93

★★★★ **BestBooks 1.0, Teleware, 201/586-2200, $99.** In a straightforward, unintimidating manner, this small-business accounting program integrates the standard bookkeeping functions of accounts receivable, accounts payable, and general ledger. Jul 93

★★ **Business Sense 1.6, Software Developers Consortium, 801/288-2216, $199.** Competent, single-user, all-in-one bookkeeping package will adequately help you keep the books for a small company, but it's not as easy to use as its competition. Feb 93

★★★ **MacInTax 1992, ChipSoft, 619/453-8722, $79.95.** It's difficult to correct your errors when using this personal tax-preparation software, but it's easier than doing your taxes by hand. The display is attractive, and the program supports electronic filing. May 93

★★★★ **Managing Your Money 5.0, MECA Software, 203/256-5000, $79.95.** An already strong financial-management program becomes easier to use and slightly more powerful with this upgrade. Jan 93

★★★★ **Quicken 4, Intuit, 415/898-6095, $69.95.** Personal-finance software is powerful and easy to learn, even for a financial neophyte. Although slower than previous versions, 4.0 lives up to its promise of making financial chores easier, and better organized. Nov 93

★★★ **WealthBuilder 2.0, Reality Technologies, 800/346-2024, $79.99.** Financial-planning software forces you to think about your money and helps you develop an investment plan. It's a good program for beginning investors, but more-sophisticated investors will want more-advanced features. May 93

GRAPHICS

★★★ **addDepth 1.0.2, Ray Dream, 415/960-0768, $179.** The purpose of this graphics program is to enhance the creation of 2-D images with 3-D effects. It's versatile, accommodating, and affordable, but working on complex images gets tedious because of the automatic application of styles. Aug 93

★★★ **Adobe Dimensions, Adobe Systems, 415/961-4400, $199.** This three-dimensional-effects utility may seem very limited, with white-only light and no surface texturing, but it's a ground-breaking product. It performs its 3-D illusions within the object-oriented, resolution-independent world of PostScript. Apr 93

★★★★ **Adobe Illustrator 5.0, Adobe Systems, 415/961-4400, $595.** The most dependable draw program on the Mac has added enough new features to boggle the mind. Although this upgrade still can't import TIFF images, it catches up with, and in some areas surpasses, the competition. Nov 93

★★★★ **Adobe Photoshop 2.5, Adobe Systems, 415/961-4400, $895.** No graphics program is as universally loved as this one, but while this upgrade builds on the program's capabilities, it ignores some minor weaknesses that have begun to peek through the product's armor. It's still great but perhaps not perfect. Jun 93

★★★ **Aldus FreeHand 3.1 (3.11), Aldus Corp., 206/628-2320, $595.** A pressure-sensitive freehand tool is the most remarkable new feature of this updated drawing program. Substitution for missing fonts is another good addition, but skimpy text-editing tools and incomplete support for EPS continue to diminish its value. Jun 92

★★★★ **Alias Sketch 1.5, Alias Research, 416/362-9181, $995.** The enhanced modeling and revamped rendering capabilities of this 3-D illustration program contribute to a tremendous and reliable upgrade, a heartening example of a company listening to its users and delivering on its promises. Jul 93

★★ **ArtBeat Professional 1.0, Pie Practical Solutions, 201/902-9500, $249.** Despite a smattering of unique capabilities, this inexpensive draw/paint program lacks features of equivalent programs. Apr 93

★★★ **artWorks 1.0, Deneba Software, 305/596-5644, $149.** If you're expecting a graphics dynamo, this combination paint and draw program will leave you a little cold. Despite its flaws, it ranks as one of the best graphics programs available under $200. Jun 93

★★ **AutoCAD Release 11 (12), Autodesk, 415/332-2344, $3500.** Customizable, bare-bones drafting upgrade partially implements a graphical user interface. Few add-ons are currently available. Dec 92

★★★★ **Blueprint 4.0, Graphsoft, 410/461-9488, $295.** Entry-level 2-D drafting program is a wonderful antidote to the complicated CAD system blues. Don't be misled by the low price; this full-fledged drafting package is powerful enough to serve professionals who appreciate the value of simplicity. Jul 93

★★ **BrushStrokes 1.0, Claris Clear Choice, 408/727-8227, $139.** If you have absolutely no experience with computer graphics, the simplified interface of this 24-bit paint program might warrant its price. Otherwise, you can find better programs for less. Oct 93

★★★ **CA-Cricket Draw III 2.0, Computer Associates International, 516/342-5224, $249.** This draw program is not going to inspire experienced Mac artists to jump up and down, but its features are abundant, the interface is straightforward, and the price is right. Oct 93

★★★ **Cachet 1.0 (1.2), Electronics for Imaging, 415/742-3400, $595.** The tools, interface, output, and documentation of this color-image editor are all quite impressive for a first version, but serious failings include slowness and disappointing sharpening. Dec 92

★★★ **Color It 2.0.1, Timeworks, 708/559-1300, $299.95.** Overpriced color paint program has a full range of painting and image-retouching capabilities, including 15 levels of undo and an impressive magic-wand tool, but its naming conventions are bewildering. Apr 93

★★ **ColorUp 1.0, Pantone, 201/935-5500, $99.95.** Professional graphic designers don't need the advice provided by this color tutorial and series of palettes. Although nonprofessionals might benefit from the information on color theory, it may not be worth the money. Nov 93

★★ **CPM Graphic Tutor 1 & 2, Caseys' Page Mill, 303/220-1463, $489 per volume.** Although some neophytes may find these CD-ROM tutorials on Adobe Illustrator and Adobe Photoshop helpful, the programs' distracting interfaces, inconsistent execution, lack of polish, and high price weigh strongly against them. May 93

★★★★ **DeBabelizer 1.5, Equilibrium Technologies, 415/332-4343, $299.** Bitmapped-graphics-conversion software supports a huge number of file formats and can work wonders. If you spend any significant amount of time dealing with file conversion, you should have this program. Nov 93

★ **Easy Color Paint 3.0, MECC, 612/569-1500, $59.95.** For a program that purports simplicity, this color paint program is anything but. Possibly the weakest, least intuitive paint program for the Mac, it's unnecessarily complex and frustrating. Jul 93

★★★★ **ElectricImage Animation System 1.5.1, Electric Image, 818/577-1627, $7495.** The most powerful animation program for the Mac improves its documentation and rendering, and adds an intuitive project window. Unfortunately, it still retails for the price of a European vacation for two. Feb 93

★★★ **Expert Draw 1.0, Expert Software, 305/567-9990, $49.95.** Inexpensive draw program is not really for experts, but it offers a decent, no-frills set of basic drawing tools and commands for beginning illustrators, of-

continues

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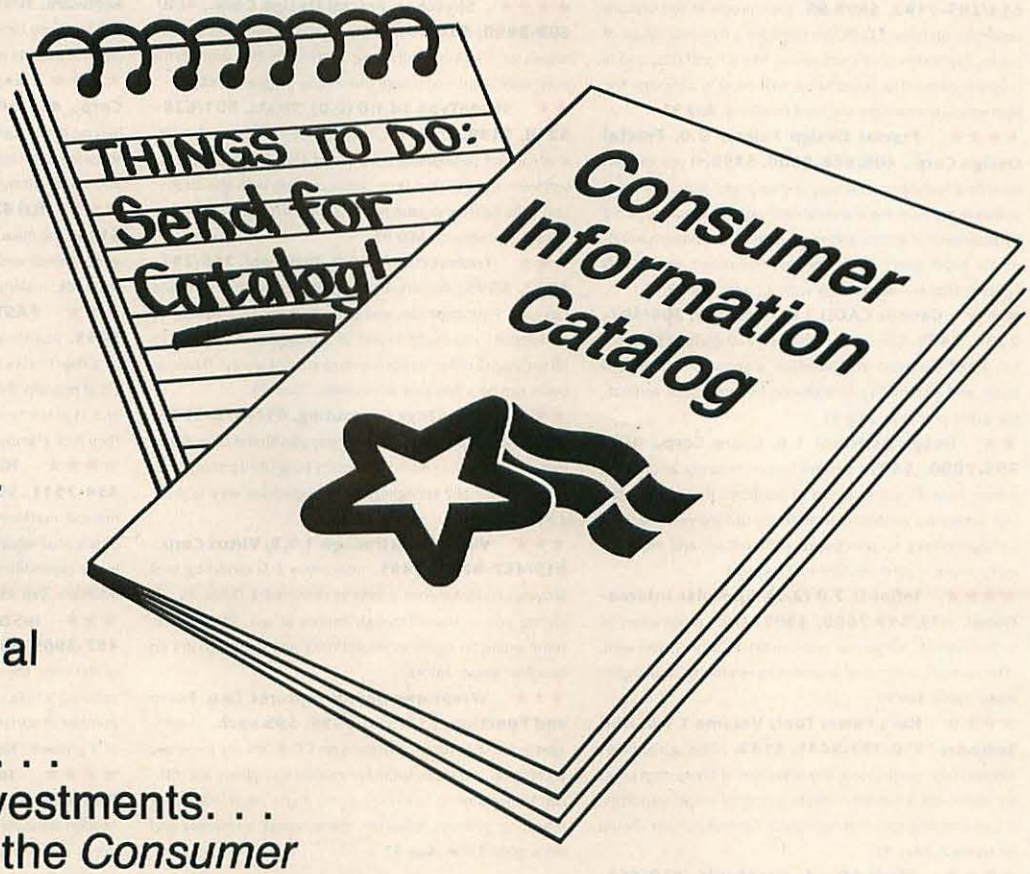

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MACWORLD Star Ratings

fice use, or anyone who is on a budget. Aug 93

★★★★ **Folio 1 Media Kit-Print Pro, D'Pix, 614/299-7192, $499.95.** Each image in this texture collection on three CD-ROMs provides a dynamic range of colors, highlights, and shadows; is free of artifacts; and is crisply focused. The collection is well chosen, although the high-resolution images are hard to access. Aug 93

★★★★ **Fractal Design Painter 2.0, Fractal Design Corp., 408/688-8800, $399.** If you can put up with a few inconveniences and surprises, this color paint software provides the real meat-and-potatoes tools required by professional artists, and many of its functions—natural-media brush tools, the color-sensitive magic wand, 2-D lighting effects—are entirely without peer. Jul 93

★★★ **Generic CADD 2.0, Autodesk, 206/487-2233, $495.** Competent, midlevel 2-D drafting program has a well-executed Mac interface, a good complement of tools, and a sprinkling of high-end features, such as floating-point precision. Aug 93

★★ **Image Assistant 1.0, Caere Corp., 408/395-7000, $495.** Besides unsatisfactorily addressing Adobe Photoshop's small list of liabilities, this image-editing software's problems include an unforgivable lack of antialiased text, no selective revert function, and an incorrectly implemented smudge tool. Apr 93

★★★★ **Infini-D 2.0 (2.5), Specular International, 413/549-7600, $995.** Rich combination of 3-D modeling, rendering, and animation tools works well, offers a nicely integrated approach to rendering, and is generally stable. Jan 93

★★★★ **Kai's Power Tools Volume 1 1.0, HSC Software, 310/392-8441, $149.** Although at times monstrously complicated, this collection of Photoshop plug-ins represents a virtually infinite supply of visual resources. It's an amazing tool that no regular Photoshop user should be without. May 93

★★★★ **MiniCAD+ 4, Graphsoft, 410/461-9488, $795.** Professionals will appreciate this competent CAD package's evolution into 3-D. It has maintained its features-champion status and is easier to use. Mar 93

★★★ **Ofoto 2.0, Light Source Computer Images, 415/461-8000, $395.** Many new features—notably color support—have been added to the already impressive toolbox of this scanning software. It often produces good results, but it rarely produces the best scan possible for a given image and output method. Jul 93

★★★★ **Paint It 1.0, Timeworks, 708/559-1300, $59.95.** Straightforward color paint program lacks image-editing tools but has a versatile cast of selection and painting tools—and it's priced to sell. Apr 93

★★★★ **PosterWorks 3.0, S. H. Pierce & Co., 617/338-2222, $395.** This large-format graphics production tool is for people who think big, up to 10,000 square feet big. It fills the need for user-defined, full-color, large-format output robustly and elegantly. Aug 93

★★★★ **PowerDraw 4.0, Engineered Software, 919/299-4843, $795.** The best new feature of this polished 2-D drafting program is an open architecture that supports modules that let you customize the program with application-specific tools, floating palettes, and menu commands. Sep 93

★★★★ **Ray Dream Designer 2.02 (2.06), Ray Dream, 415/960-0765, $299.** Experienced 3-D aficionados will find this 3-D–imaging software a welcome addition to their arsenal, and beginners may find it ideal for the leap from 2-D to 3-D. Improved text-handling and viewing capabilities would make it even better. Sep 92

★★★★ **Sketcher, Fractal Design Corp., 408/688-8800, $149.** A variety of effects reproduce techniques of traditional drawing tools with this wonderful gray-scale paint and image processing program. Feb 93

★★ **StrataType 3d 1.0 (2.0), Strata, 801/628-5218, $199.** The rulers, texture palette, custom bevels, and canned positioning schemes of this 3-D type-effects software are nice, but they can't compare with the animation skills, lighting capabilities, and superb rendering of other available programs. Mar 93

★★★ **Transverter Pro 1.0, TechPool, 216/291-1922, $395.** Remarkable graphics-conversion software can read PostScript files and convert them to a variety of formats. As you might expect of a program attempting to fill such a tall order, its conversions are not always flawless, but it can be a lifesaver nonetheless. Nov 93

★★★ **Tree, Onyx Computing, 617/876-3876, $295.** Single-purpose program generates lifelike color drawings of trees from a number of easily controlled parameters. Although visually appealing, it's an expensive way to draw a tree. May 93

★★★ **Virtus WalkThrough 1.1.3, Virtus Corp., 919/467-9700, $495.** Interactive 3-D modeling tool provides instantaneous access to rendered 3-D scenes, allowing you to travel through models at will. While it has some problems (such as occasionally just quitting), it's an excellent value. Jul 93

★★★ **Wraptures One, Wraptures Two, Form and Function, 619/536-9999, $95 each.** The images in these texture collections on CD-ROM are generally acceptable, although some are muddy and others are difficult to decipher at low resolutions. If you need images for repeating patterns, however, these repeat seamlessly and are a good value. Aug 93

MATH/SCIENCE

★★★ **Alchemy III, Tripos Associates, 314/647-1099, $950.** Molecular-modeling software can model decapeptides and DNA fragments, in addition to the expected small molecules, with refreshing alacrity on a Mac IIci or better. Sep 93

★★★ **Amazing Universe 2.1, Hopkins Technology, 612/931-9376, $79.95.** Space-image exploration package on CD-ROM offers an amazing variety of astronomical images with a very competent program (ProVision II) for modifying and inspecting those images. It assumes that users won't be fazed by such things as writing their own image-convolution matrices. Aug 93

★★★ **Caduceus Physics 1.0, Scientia, 617/776-3427, $130.** Giant HyperCard stack consists of carefully indexed cards covering small conceptual bites of physics; it's the first in a series designed to prepare students for the Medical College Admissions Test (MCAT). Jan 93

★★★★ **CircuitMaker 3.0, MicroCode Engineering, 801/226-4470, $200.** Much of the tedium of diagramming circuits and constructing prototypes is relieved by this digital circuit simulator that provides a powerful set of basic tools for a very reasonable price. Aug 93

★★★★ **Data Desk 4.0 (4.1), Data Description, 607/257-1000, $595.** For finding patterns in data, this statistical-analysis program has no peer. Years of refinement have made it a uniquely valuable tool, despite its lack of some tests found in larger programs. May 93

★★★ **Expert Astronomer 1.0 (1.1), Expert Software, 305/567-9990, $49.95.** Draw maps of the sky from any location in the Solar System and learn about celestial objects with this astronomy software. Dec 92

★★★★ **Expressionist 3.0 (3.01), Prescience Corp., 415/543-2252, $199.95.** If you work regularly on similar topics, you can customize this equation-writing software to produce equations with exactly the appearance you want, letting you work at amazing speed. Mar 93

★★★ **f(z) 6, Lascaux Graphics, 602/299-0661, $115.** The main problem this math software attacks is four-dimensional visualization. It costs slightly more than a textbook, making it a great educational bargain. Sep 93

★★★ **FASTAT 2.0, SYSTAT, 708/864-5670, $495.** Statistical business-analysis software makes sense as a day-to-day statistics tool for business or scientific users. It provides the right statistical tests for most requirements, and its graph types provide plenty of information, although they lack glamour. Jun 93

★★★★ **HiQ 2.0, Bimillennium Corp., 408/354-7511, $995.** The three great strengths of this numerical mathematics software are its fast and capable differential-equation-solving section, its excellent matrix-math capabilities, and its very natural notebook-format interface. Sep 93

★★★ **InStat 2.01, GraphPad Software, 619/457-3909, $95.** For scientists with a limited background in statistics, the chatty clarity of this lab-oriented statistics software's help screens will be invaluable, while the limited number of variables and minimal graphics won't be much of a problem. Nov 93

★★★★ **Interactive Physics II 1.0 (1.01), Knowledge Revolution, 415/553-8153, $399.** Motion simulation software is an improvement over traditional classroom instruction in physics. This new version greatly expands the range of problems that can be solved, and adds support for QuickTime. Dec 92

★★★ **LabTutor 2.0, J. K. Eaton, 415/723-1971, $50.** Tutorial on laboratory computer-interfacing provides a detailed, thorough exposition of computer interfacing in general, but it requires LabView and a National Instruments interface board for its exercises. Sep 93

★★★★ **MacBreadboard 1.1 (1.13), Yoeric Software, 919/644-1620, $59.95.** Useful educational engineering software simulates with excruciating detail every aspect of a digital integrated-circuit breadboard trainer. It accurately replicates and even surpasses the behavior of a physical breadboard—without burning out IC chips. Dec 92

★★★★ **MacPhase 1.2, Otter Solutions, 315/768-3956, $159.** Low-cost, scientific-data-visualization software with a large assortment of mathematical tools is one of the few authentic bargains in science software. One of its principal strengths is a well-planned color lookup table editor that's delightfully easy to use. May 93

★★★ **MathCAD 3.1, MathSoft, 617/577-1017, $495.** Numerical and symbolic computation software is easy to learn and use, and is much more powerful than earlier versions. It doesn't compete in scope with the largest math programs, but for most science and engineering tasks, it's a fast way to get problems solved. Jun 93

★★★★ **Mathematica 2.2, Wolfram Research, 217/398-0700, $595.** The one essential program in science and mathematics adds a function browser that makes

continues

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MACWORLD Star Ratings

the program as easy to use as it should be, as well as improvements to computational routines. Sep 93

★★★★ **MathType 3.0, Design Science, 310/433-0685, $199.** This equation-writing software makes automatic typographical decisions, which is helpful if you produce documents on a wide range of subjects. Its smooth integration with Microsoft Word is also convenient. Mar 93

★★★★ **Sequencher 2.0 (2.0.8), Gene Codes Corp., 313/769-7249, $2200.** While not implementing everything a DNA researcher could want, this software for manipulating DNA-sequence information does provide the things a researcher really needs. The single best feature is its raw speed. Dec 92

★★★ **Simulink 1.2, The MathWorks, 508/653-1415, $3995.** If you hear the word *Bode-plot* several times a week at work, this math-simulation software is designed to make your life wonderful. Little glitches and a command-line orientation are drawbacks. Dec 92

★★★★ **Spyglass Dicer 2.0, Spyglass, 217/355-6000, $695.** Scientific 3-D visualization tool displays a two-dimensional slice through a three-dimensional object (which is represented in the computer by a data table). While Dicer pushes the limits of the Mac hardware, for its function this product is really the only game in town. Jul 93

★★★ **Spyglass Transform 3.0, Spyglass, 217/355-6000, $595.** Scientific-visualization software can access data stored in every common format, offers some useful presentation-graphics features, and includes a programming language with a large range of built-in, high-level scientific functions. Sep 93

★★★★ **StatView 4.01, Abacus Concepts, 510/540-1949, $595.** If your work uses statistics for decision support rather than abstract analysis, and you regularly have to present your results to nonstatisticians, this is the statistics package for you. Oct 93

★★★ **Sum Total 1.01, Concurrent Engineering Tools, 602/464-8208, $99.95.** Exceptional calculator utility is packed with advanced features, including a mode that lets you sample colors and use the numerical color values in calculations. The convenient palette approach causes a distinct time-lag in menu operations. Oct 93

★★★★ **Theorist 1.5, Prescience Corp., 415/543-2252, $449.95.** Symbolic-math program that you can figure out by yourself adds a useful table feature, more special functions of physics, and better graphics. It's still the only program to use real notation directly. May 93

★★★★★ **Voyager II, Carina Software, 510/352-7328, $159.95.** If a brilliantly lit, star-filled sky holds more than a moment's fascination for you, you need to know about this astronomy program. In a firmament of mostly faint and forgettable astronomy software, it's a supernova. Jul 93

ORGANIZATION/PRODUCTIVITY

★★★ **Achieving Your Career 1.02, Up Software, 415/921-4691, $69.** HyperCard-based job-search software succeeds by compactly organizing. It provides a structure for identifying letters to write, phone calls to make, and interviews to follow up. Aug 93

★★ **ACT 1.0 (1.01), Contact Software International, 214/919-9500, $395.** While this contact manager has several laudable features, such as customizable contact views and an integrated word processor, learning how to use it is a frustrating experience. Feb 93

★★★★ **CalendarMaker 4.0, CE Software, 515/224-1995, $59.95.** Polished, intuitive calendar-making program is straightforward, with a variety of options for customizing your calendar. Some features can be cumbersome. Oct 93

★★ **ClienTrac 1.7.1, Whiskey Hill Software, 415/851-8702, $135.** Easy-to-use, HyperCard-based contact-management software performs as billed, but fails to inspire much enthusiasm. Aug 93

★★★ **Contact Ease 2.0.1, WestWare, 619/660-0356, $395 to $1495.** Contact-management and sales-automation software helps salespeople keep in touch with contacts, makes it easy to generate letters, and maintains detailed records of activities. It has a few quirks but is overall a good program. Aug 93

★★★★ **DateBook 1.5.1 (1.5.li), After Hours Software, 818/780-2220, $125.** Personal time manager offers a flexible approach to event scheduling and to-do-list management. This upgrade adds new features and fixes bugs that plagued the first version. Feb 93

★★★★ **DayMaker 2.0 (2.03), Pastel Development Corp., 212/941-7500, $129.95.** If you need to organize lots of disparate information, follow up on meetings with many people, create an archive of completed work, and print out lists of to-do items, this free-form personal information manager is a great choice. May 93

★★★ **Dynodex 3.0, Portfolio Software, 408/252-0420, $89.95.** The speed and printing options of this field-based address-book manager are its strengths, but this upgrade adds welcome improvements to the interface, including automatic formatting of phone numbers. Apr 93

★★ **Hello, Atelier Systems, 619/453-4300, $99.** Unusual combination of contact management and word processing in a compact package. This first release is hampered by several notable flaws, such as text documents that must be linked to a contact name. Jan 93

★★★★ **In Control 2.0, Attain Corp., 617/776-1110, $129.95.** The best features of an outlining program are combined with those of a database, making it easy to sort, search, organize, and print your to-do list. Aug 93

★★★★ **Inspiration 4.0, Inspiration Software, 503/245-9011, $295.** Watch your ideas evolve in a dynamic diagram mode and a text-based outline mode with this brainstorming tool. It works best as a vehicle for organizing and developing ideas. Feb 93

★★★ **Intouch 2.0.4, Advanced Software, 408/733-0745, $99.95.** Free-form database is a fast and easy way to manage contact information. Although this version adds a handy reminder system, it falls short as a calendar planner. Feb 93

★★★ **LapTrack For the Mac 1.0b, Timeslips Corp., 508/768-6100, $79.95.** Time- and expense-tracking program offers the right features for the on-the-go professional, but the interface is overcomplicated and the documentation is sloppy. Still, in spite of its flaws, it does an excellent job. May 93

★★★ **Nolo's Personal RecordKeeper 3.0, Nolo Press, 510/549-1976, $34.96.** Hierarchically configured database organizes your personal affairs, including legal matters, financial records, insurance plans, family history, and more, but it is frustratingly inflexible. Jan 93

★★★★ **Now Up-to-Date 2.0, Now Software, 503/274-2800, $99 to $799.** Calendar utility combines flexibility, ease-of-use, and streamlined operations in an almost irresistible package. The Reminder control panel, while a great new feature, has had minor conflicts. Jun 93

★★★ **Office Manager 2.1 (2.5), White Crow Software, 800/424-0310, $99.** Simple contact- and project-management software is powerful for small databases, but reliance on HyperCard limits its usefulness for low-end Macs. Dec 92

★★★ **Power Team 1.0, ProVue Development Corp., 714/892-8199, $149.95.** Personal information manager consists of seven modules: Phone Book, Calendar, Correspondence, Checkbook, Calculator, Expense Report, and Mailing List. It has some bugs, but the data entry features are excellent. Oct 93

★★★★ **Spiral 1.0 (1.02), Technology Works, 512/794-8533, $129.** Designed *specifically for taking* and organizing notes, this product provides an excellent feature set, including bookmarks and an option for automatically expanding abbreviations, but it's marred by some errors in the editing and import/export processes. Mar 93

★★ **TimeVision 1.0, Powercore, 815/468-3737, $99.** New scheduler with notepad and card-file functions tacked on has some worthwhile features, but in general doesn't match up to the competition. May 93

PRESENTATION TOOLS

★★★★ **Action 1.0 (1.02), Macromedia, 415/252-2000, $495.** Entry-level multimedia integration program offers, for its price, a rich selection of features, including a variety of transitions as well as *gradient and* patterned backgrounds. It makes producing presentations with sound and motion surprisingly easy. Feb 93

★★★★ **Adobe Premiere 2.0 (2.0.1), Adobe Systems, 415/961-4400, $695.** A dream command post for video professionals, this QuickTime movie-editing software produces stunning special effects with little effort. Only the program's appetite for memory, disk space, and computer horsepower prevent it from being the nonprofessional's dream as well. Jan 93

★★★★ **Astound 1.0, Gold Disk, 408/982-0200, $399.** This presentation software lets you include sound, text, and graphics animation with no more effort than pasting in a chart in other products. It's easily accessible and a good value. Nov 93

★★ **Comet CG 1.0.3, MSI, 317/842-5097, $995.** Program for generating antialiased text over live video is reasonably priced compared with dedicated graphics systems, but you're likely to be as astonished by its limitations as you are impressed by its capabilities. May 93

★★★★ **CoSA After Effects 1.1, CoSA, 401/831-2672, $1295.** QuickTime movie editor blurs the boundaries between animation and traditional video-editing. It yields at least as many oohs and ahs as it does irritations, and it produces results that simply can't be created in other packages. Oct 93

★★★ **DiVA VideoShop 1.0, DiVA Corp., 617/491-4147, $599.** Instantaneous playback sets this graceful QuickTime editing software apart. Its simple beauty is slightly offset by a few rough edges, a lousy manual, and an occasionally clumsy interface. Jul 92

★★★ **Hi Rez Audio Volume 1.0, Presto Studios, 619/689-4895, $149.95.** The enjoyable, high-quality music on this CD-ROM adds a nice touch to presentations. The software for browsing the music is quirky, and the product could use some documentation. Jul 93

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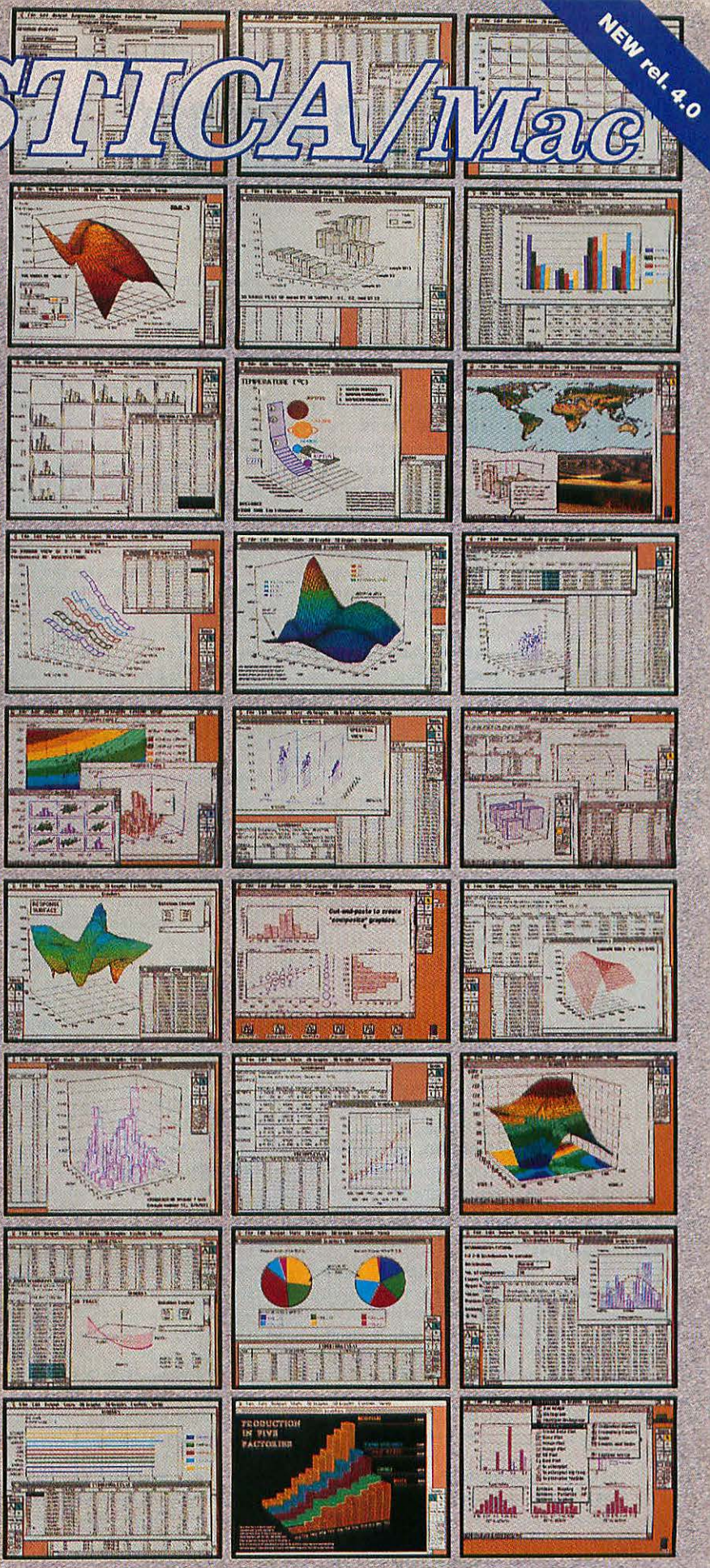

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MACWORLD Star Ratings

★★★ **Interactive Training for Director 1.1, Media In Motion, 415/621-0707, $199.** This somewhat expensive program teaches basic Macromedia Director skills and provides a foundation for exploring Director's other features. It has a clear, often lighthearted approach, but navigating the lessons can be frustrating. Jun 93

★★★ **Macromedia Director 3.1 (3.1.1), Macromedia, 415/252-2000, $1195.** This update to a powerful and versatile multimedia authoring tool adds 23 scripting commands, QuickTime, and a utility that compiles movies into a faster playback format—but the whopping $149 addition to the price makes it an upgrade most users can afford to miss. Feb 93

★★★ **Media-Pedia Video Clips, Media-Pedia, 617/235-5617, $195 to $495.** Fifty-seven minutes of stock footage for use in QuickTime movies includes over 150 different segments, ranging from unremarkable to dramatic to genuinely funny. Apr 93

★★★★ **Microsoft PowerPoint 3.0, Microsoft, 206/882-8080, $495.** This presentation program is ahead of the pack in terms of convenience and ease of use. Although the ready-made template collection is pretty paltry, the extensive system of master layers, reliable cross-platform compatibility, and strong on-screen presentation capabilities more than compensate. Feb 93

★★ **MovieWorks 1.1, Interactive Solutions, 415/377-0136, $395.** Over 100 bugs were fixed in version 1.1 of this multimedia authoring software that takes an all-in-one approach to creating presentations, but problems remain. It's a good idea, poorly executed. Jun 93

★★★ **Passport Producer 1.0, Passport Designs, 415/726-0280, $495.** Strong timing controls and good sound capabilities mix with middling text and image-handling and a lack of basic animation options in this partially successful entry-level multimedia program. Apr 93

★★★ **Special Delivery 1.0 (1.1), Interactive Media Corp., 415/948-0745, $399.** While this entry-level multimedia package has all the tools you need to assemble interactive screen presentations that burst with motion and sound, it has a disorienting interface and lacks the polish and power of other programs. Mar 93

★★★ **VideoFusion 1.0.1, VideoFusion, 419/891-1090, $649.** Collection of special effects for QuickTime movies may not be for the casual user, but if you have the equipment and you can't live without spinning logos and superimposed shots, then go ahead and indulge. Jul 93

★★★★ **Working Model 1.0, Knowledge Revolution, 415/553-8153, $995.** Animators and engineers will love this terrific motion simulator that mimics real motion by applying physical laws to objects. It's easy to learn and use, but you'll need some understanding of math and physics. Oct 93

PROGRAMMING

★★★ **CLImate 1.0, Orchard Software, 617/876-4608, $59.95.** With a little more documentation and a few more sample programs, this utility that provides a subset of Unix-like commands for the Mac environment could be an irresistable package. Oct 93

★★★ **EISToolKit 2.0, MicroStrategy, 302/427-8800, $1995.** Reliable, field-tested developer's environment for creating executive information systems provides automatic access to information in spreadsheets and databases across a distributed system, and serves up the information on screens that provide automatic graphing, analysis, and report generation. May 93

★★★★ **FutureBASIC 1.0, Zedcor, 602/881-8101, $299.95.** Complete, easy-to-learn, real-world programming tool has full Toolbox, System 7, and assembler support. It's a wonderful tool that's rapidly becoming a favorite among commercial developers. Jul 93

★★★ **Macintosh Common Lisp 2.0, APDA, 716/871-6555, $495.** Anyone who likes programming in LISP will be pleased with the environment provided by this version of the standard dialect and its extensive debugging and interface-building facilities. Oct 93

★★★ **MetaDesign for the Macintosh 3.0, Meta Software Corp., 617/576-6920, $250.** This diagramming tool for structured systems analysis offers easy ways to group and ungroup symbols in diagrams and to show relationships between symbols. It excels at austere, classic flowcharts but could use some flashier features, such as shaded backgrounds, for presentations. Mar 93

★★★ **Object Logo Student Edition, Paradigm Software, 617/576-7675, $49.95.** This book-plus-disk package offers a wide-ranging introduction to programming concepts. It's aimed roughly at the high-school educational level and lets you see something happen for every few lines of code you type. Jul 93

★★★★ **Object Master 1.0.2, ACI US, 408/252-4444, $395.** Successful combination of the superior object-management facilities typically found in Smalltalk, and a first-rate programmer's editor. Plus it works with the most popular languages: C, C++, and Pascal. Jan 93

★★★★ **PG:Pro 1.5, Staz Software, 601/225-7085, $169.** For part-time or novice programmers, the combination of these BASIC programming tools and FutureBASIC is a fast path to a working program. Jul 93

★★★ **PowerPacks 2.0, NDG Phoenix, 301/718-8880, $225.** Programmers' tool kit for 4th Dimension provides 280 external procedures to improve custom applications and exploit System 7 features. Don't expect any quick fixes for 4D's less-than-blistering performance in most areas, though. Oct 93

★★★ **Serius Programmer 3.0, Serius Corp., 801/261-7900, $395.** The graphical interface of this application-design environment provides nonprogrammers with tools for creating custom software, but the documentation lacks critical explanations. Jan 93

★★★ **SoftPolish 1.1, Language Systems Corp., 703/478-0181, $295.** Program-quality-assurance utility systematically checks the resources in a program's interface against a huge laundry list of errors. It's a programming tool for anyone who hopes to produce a commercial Mac application. Sep 93

★★★ **SourceSafe 2.1, One Tree Software, 919/821-2300, $295 to $1195.** Solid, relatively easy-to-use product handles program-development administrative tasks, including version control, for multiplatform programs being created by groups. Sep 93

★★★★ **Symantec C++ for Macintosh 6.0, Symantec Corp., 408/253-9600, $499.** If you like Think C, you'll like this software-development system, too. For the Mac, it's an excellent opportunity to catch a new wave in programming. Developers have generally been pleased, especially in compiler speed and code quality. Nov 93

★★★★ **Think C 5.0, Symantec Corp., 408/253-9600, $299.** While not a radical improvement, this is a significant upgrade to an outstanding development tool. Beginners won't find the documentation helpful. Jul 92

★★★★★ **Think Pascal 4.0, Symantec Corp., 408/252-3570, $249.** A remarkable achievement—a programming language and environment full-bodied enough for professional programmers while still inviting for neophytes. No weak points and dozens of strengths. Aug 92

UTILITIES

★★★ **7th Heaven 2.5, Logical Solutions, 612/659-2495, $99.95.** Our reviewer found the seven enhancements to System 7 fun and elegantly done, but not all of them were useful. Jul 93

★★★ **Alki Seek 2.1, Alki Software Corp., 206/286-2600, $39.95.** Competent file-finding utility scans by file name or content and lets you combine multiple search criteria. It cannot search in the background or find text in compressed files. Jul 93

★★★★ **At Ease 1.0 (1.1), Apple Computer, 408/996-1010, $59.** Sweet, simple, secure substitute for the Finder displays a clean, attractive page full of oversize icons where a single click launches a program or document. To delete, rename, or move files, you have to return to the Finder. Mar 93

★★★ **Billy Steinberg's PBTools 1.0.1, Inline Design, 203/435-4995, $99.95.** If you want basic PowerBook management without added frills or complex menu bar displays, this collection of four utilities may be just your cup of tea. Jul 93

★★★ **Chameleon 2.0.3, Logical Solutions, 612/659-2495, $59.95.** Sleek desktop-pattern editor comes with an ample supply of rich, textured color images and a set of limited but functional editing tools. Sep 93

★★★★ **ClickChange 2.0, Dubl-Click Software, 818/888-2068, $89.95.** Interface-customizing package has nothing you need but is filled with everything you want, including tools that let you alter major elements of the Mac's look-and-feel. Aug 93

★★★★ **Conflict Catcher and Other Innovative Utilities 1.0 (1.3.8), Casady & Greene, 408/484-9228, $79.95.** Enable or disable INITs and startup items when you boot, with this INIT manager that comes with four other system-related utilities. It's a worthwhile investment even if you own another INIT manager. Mar 93

★★★ **Connectix Desktop Utilities 1.0, Connectix Corp., 415/571-5100, $99.** Although some of the 16 utilities offered in this package are more at home on a PowerBook, this collection offers one-stop shopping at a low price. It's worth it for the file-synchronization, Keyboard Power, and Hot Keys features alone. Nov 93

★★★★ **CopyDoubler 2.0 (2.0.1), Fifth Generation Systems, 504/291-7221, $59.** This utility speeds up copying, lets you queue jobs for background copying, and offers a variety of other useful, copying-oriented features—all at a very reasonable price. Nov 93

★★★ **Copyright Pro 1.0.3, CSG Technologies, 412/471-7170, $79.** Utility takes over the Finder's copying function, copies in the background, and allows you to regularly schedule copying. It doesn't speed up copying, however. Nov 93

★★★★ **CPU 2.0, Connectix Corp., 415/571-5100, $99.** Reasonably priced collection of utilities for

continues

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the PowerBook adds new features, including file synchronization, that easily justify the upgrade price. Sep 93

★★★ **DiskFit Direct 1.0, Dantz Development Corp., 510/849-0293, $49.95.** Basic but efficient backup system is simple and painless enough to foster better backup habits in anyone who uses it. It doesn't back up to hard drives or tape drives. May 93

★★★ **Drive 7 2.3 (2.34), Casa Blanca Works, 415/461-2227, $79.95.** Universal hard drive updater and formatter has an attractive, uncluttered interface that's so easy to use it makes hard drive maintenance almost relaxing. Jan 93

★★★ **DriveShare 1.03, Casa Blanca Works, 415/461-2227, $149.95.** This utility allows users to share a removable drive over a network. It's most useful if your network consists of both System 6 and System 7 users, as its advantages over System 7 file sharing are slight. Nov 93

★★ **DynoPage 2.0, Portfolio Software, 408/252-0420, $89.95.** While this utility simplifies the printing of booklets and double-sided pages, it doesn't support PostScript graphics, is incompatible with some popular applications, and has a buggy drag-and-drop feature. Jul 93

★ **eDisk 1.0, Alysis Software Corp., 415/566-2263, $149.95.** Driver-level compression software has little to recommend it over file-level, idle-time compression programs. The biggest drawback is the strong potential for disk or file corruption. Oct 93

★★★ **Hard Disk ToolKit Personal Edition 1.1.2, FWB Software, 415/474-8055, $79.** The more arcane features of the heavy-duty Hard Disk ToolKit have been stripped out of this entry-level, non-power-user version, but everything you really need to format, update, partition, and manage your hard drive is included. Jan 93

★★★ **I Like Icon, Baseline Publishing, 901/682-9676, $59.95.** Glitzy utility has tools for icon editing, has a nice library of icons, and can create animated icons. Some basic features, such as a text tool, are missing, and the animated icons are fun but impractical. Sep 93

★★★ **Icon 7, Inline Design, 203/435-4995, $79.95.** Simple, straightforward utility has a streamlined and intuitive library feature for storing and retrieving icons, plus tools for icon editing. Its icon collection, however, is pretty paltry. Sep 93

★★★ **INITPicker 3.0 (3.02), Inline Design, 203/435-4995, $79.95.** This INIT manager's ability to load aliased INITs over a network will interest network managers. While it disables problem INITs at start-up, it doesn't help you identify the cause of INIT conflicts that don't cause the Mac to crash at start-up. Mar 93

★★★★ **Inline Sync 1.0 (1.01), Inline Design, 203/435-4995, $129.95.** Keep the latest version of your work on your portable machine and your desktop Mac with this file-sync software. It's easy to install, easy to use, easy on the wallet, and does the job well. Mar 93

★★★★ **KidDesk 1.0, Edmark Corp., 206/556-8484, $39.95.** If you have young children who love to experiment with your Mac, this desktop environment provides easily navigable play while protecting your files from the havoc that little fingers can wreak. Jun 93

★★★★ **Kiwi Power Menus 1.0, Kiwi Software, 805/685-4031, $39.95.** This simple little utility adds flexibility to the Apple menu by adding an unlimited number of submenus and enabling you to change the font and size in the menus. Dec 92

★★ **Magic Typist 2.0, Olduvai Corp., 305/670-1112, $129.** If you want to speed up typing of repetitive phrases or if you don't have full use of your hands, this utility, which automates typing of repetitive phrases, may be useful, but some functions work erratically or not at all in Microsoft Word. Sep 93

★★★★ **Magnet 1.0 (1.01), No Hands Software, 415/321-7340, $129.95.** Automation aids file management with this software. It creates "magnets" that trigger in response to user-specified events and automatically look for files to copy, move, or alias. Feb 93

★★★ **Norton Essentials for PowerBook 1.0, Symantec Corp., 310/453-4600, $129.** Uneven collection of PowerBook utilities ranges from the useful Instant Access module, which automatically turns AppleTalk on and off, to the relatively inaccurate Battery Gauge feature, which tries to tell you your battery's status. Apr 93

★★★★ **Now Utilities 4.0.1, Now Software, 503/274-2800, $129.** Many thoughtful improvements have been added to this collection of utilities, which is now better integrated, more logically designed, and still an excellent deal for your dollar. The new scrapbook feature, however, is awkward and inconvenient. Aug 93

★★★ **Peace of Mind 1.2.2, Polybus Systems Corp., 716/871-6533, $149.** Hardware diagnostic tool performs exhaustive tests on major Mac hardware components; does an excellent job of diagnosing simple simulated hardware errors. The program has minor bugs and lacks a comparative test-history feature. Jun 93

★★★★ **PicturePress 2.5, Storm Technology, 415/691-6600, $199.** This image-compression software supports every useful storage mode, has new calculation features for improved image fidelity, and is twice as fast as version 2.0. If you work with images professionally, it's the clear choice. Mar 93

★★★ **PowerMerge 1.0.2, Leader Technologies, 714/757-1787, $129.** File-synchronization utility has a potentially confusing interface, but is a handy means of updating selected files so that different Macs end up with identical versions of the selected documents. Apr 93

★★★ **Public Utilities for the Macintosh 1.0, Fifth Generation Systems, 504/291-7221, $149.** Utility program sticks to the basics of disk diagnosis, disk repair, and file optimization. It does a good, and in some cases unique, job, although disk optimization is slow. Fifth Generation's technical support is excellent. Jun 93

★★★ **RapidTrak 1.0.1, Insignia Solutions, 415/694-7600, $99.95.** If you've got RAM to spare, this hard drive formatter offers driver-level RAM caching to store frequently used data and improve performance, especially on slower-speed drives. May 93

★★★★ **Retrospect 2.0, Dantz Development Corp., 510/849-0293, $249.** Powerful backup and archiving software has an improved interface and scripting capabilities, and works well for all levels of users. Sep 93

★★★★ **Retrospect Remote 2.0, Dantz Development Corp., 510/849-0293, $449.** Utility allows fast, automatic backup of networked Macs to a central Mac with a backup device. It worked flawlessly in our reviewer's tests. Sep 93

★★★ **Safe and Sound, Central Point Software, 503/690-8090, $49.95.** Limited but useful disk-protection and -salvage utility has a clean, simple interface and is an efficient emergency recovery tool. Jun 93

★★ **Safe or Sorry 1.0, Olduvai Corp., 305/670-1112, $59.** Unobtrusive control panel periodically saves all of your keystrokes, but requires System 7.1 and offers no clear-cut advantages when compared with other text-recovery programs. Oct 93

★★ **SafeDeposit 1.2, Dayna Communications, 801/269-7200, $189.** Automated backup program is easy to set up but slow. Also, unattended backups must be restarted from scratch if disk space runs short and a new disk isn't inserted. Sep 93

★★★★ **Screenscapes 1.0.1, Kiwi Software, 805/685-4031, $44.95.** With more than 600 desktop patterns—and a suite of well-designed modules to transform those patterns—this fun and frivolous utility lifts desktop-pattern design to new heights of elegance. Nov 93

★★★ **Silverlining 5.4, La Cie, 800/999-3919, $149.** Extensive and detailed testing is only one of many advanced functions offered by this hard drive–management utility. The interface is apt to confuse beginners. Jan 93

★★★★ **SnapBack 1.0, Golden Triangle Computers, 619/279-2100, $129.** For regular day-to-day backups, this network backup software is a great choice. Its strength lies in its simplicity and its easy-to-use, one-window interface, but it requires a dedicated hard drive. Dec 92

★★★ **Square One 1.5.2, Binary Software, 310/582-8293, $74.** Flexible, attractive icon-based file launcher provides infinitely customizable palettes, including one that displays active applications. The application will consume 400K of your system memory. Aug 93

★★ **Stacker for the Macintosh 1.0.1, Stac Electronics, 619/431-7474, $149.** As long as you pay attention to the capacity of your hard drive, this driver-level compression product performs reasonably well, except for its slow hard drive read quotient. Oct 93

★★★★ **Star Trek: The Screen Saver, Berkeley Systems, 510/540-5535, $59.95.** Go where no Mac has gone before with this screen saver based on the original "Star Trek." Modules vary from simple messages in "Trek"-inspired fonts to an endless parade of aliens, spacecraft, and artifacts from different episodes. May 93

★★★★ **Star Wars Visual Clips, Sound Source Unlimited, 805/494-9996, $89.95.** Control panel lets you play QuickTime movie clips from *Star Wars* at system events. If you have the money, the hard drive space, and the RAM, this is the kind of totally cool toy that will make you remember why you love your Mac. Sep 93

★★★★ **StuffIt Deluxe with SpaceSaver 3.0, Aladdin Systems, 408/761-6200, $120.** Its many conversion tools, automatic compression capabilities, reliability checks, and acceptable performance make this product the jack-of-all-trades of compression utilities. Aug 93

★★★ **Super 7 Utilities, Atticus Software, 203/324-1142, $99.95.** Collection of seven control panels/extensions adds some ease of use to System 7, although none of its functions are essential. Modules perform tricks such as turning any menu into a tear-off palette, and randomizing the sounds that play in response to errors. Apr 93

★★ **TimesTwo 1.0.1, Golden Triangle Computers, 619/279-2100, $149.** Automatic disk-compression utility operates at the disk-driver level. A number of quirks, such as its ungraceful handling of full disks, are problems. May 93

★★★★ **UpDiff 1.0, KyZen Corp., 609/354-3863, $169.** Innovative program compares two versions of a file, extracts the differences, and creates a difference file that is typically smaller than the original and can be

continues

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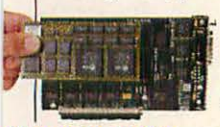

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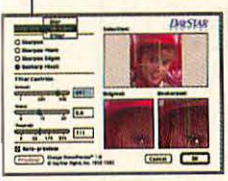

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††NTSC adapter available December 1993.
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Circle 124 on reader service card

MACWORLD Star Ratings

used to update the older file. Dec 92

★★★ **Virtual 3.0.1, Connectix Corp., 415/571-5100, $99.** If you need to eke out as much virtual memory speed as possible, this utility may be a useful tool. For System 6 users who want virtual memory, it's the only game in town. Sep 93

★★★ **Voice Navigator SW 2.3, Articulate Systems, 617/935-5656, $399.** Talk back to your Mac (if it has built-in sound input) with this speech-recognition software. Defining macros that respond to voice commands can be frustrating, but the product is a real boon for disabled users. Jan 93

★★★ **WonderPrint 1.0, Delta Tao Software, 408/730-9336, $59.** StyleWriters and DeskWriters produce halftones good enough for newsletters with this printing extension. Jan 93

VERTICAL MARKETS

★★★ **Compare-A-Loan 4.0.2 (4.1), Softflair, 612/894-3357, $79.95.** Although geared to professionals, this product for home-loan evaluation provides thorough documentation and is structured so that anyone can use it. Apr 93

★★★★ **Diet Balancer 1.0 (1.05), Nutridata Software Corp., 914/298-1308, $69.95.** Easy-to-use personalized weight-planning tool includes a database of nutritional values and standard serving sizes, and is useful for home diet-planning. Dec 92

★★★ **Expert Home Design 1.0 (1.0.3), Expert Software, 305/567-9990, $49.95.** Quickly and easily create home- or office-interior layouts that are precise, but not as detailed as blueprints, with this interior design software. It doesn't do automatic side views, but it's a good value nonetheless. May 93

★★ **Expert Landscape Design 1.0 (1.0.2), Expert Software, 305/567-9990, $49.95.** Bare-bones drawing environment for experimenting with landscape design is inexpensive, but its usefulness is severely limited because of awkward color and pattern tools. Feb 93

★★★★ **Grade Machine 5.0, Misty City Software, 800/795-0049, $79.** Teachers' lives get easier with this software that quickly sets up a useful electronic grade book. Program includes networking capabilities plus dozens of options for printing reports. Dec 92

★★★ **JobTracker 2.02 (2.5), InfoSolutions, 814/355-2983, $395 to $844.** Designed specifically for publication management, this scheduling and project-management software isn't completely polished, but it manages the job competently. Dec 92

★★★ **LoanLease Library 3.0.3 (3.05), Softflair, 612/894-3357, $99.95.** If you are generating a loan or a lease and need to keep track of payments, this well-documented program for loan evaluation is a worthwhile investment, despite its minor eccentricities. Apr 93

★★★ **Making the Grade 2.0 (2.2), Jay Klein Productions, 719/591-9815, $99.95.** This gradebook software is easy to learn; but if you're already spreadsheet-literate, the friendly dialog boxes and reminders may get in the way. Dec 92

★★★★ **Musicshop 1.0, Opcode Systems, 415/856-3333, $149.95.** MIDI sequencer is an excellent choice as a first sequencer. It's powerful enough to satisfy the needs of most MIDI users. Oct 93

★★★ **Nutri-Calc Plus 1.2, Camde Corp., 602/926-2632, $159.** Designed for knowledgeable and serious users, this powerful, flexible program manages nutrition information and analyzes diets. Dec 92

★★★ **Roll Call 2.0, By the Numbers, 603/927-4508, $495.** 4th Dimension database application for church management helps track donations, attendance, church-group membership, and visitation. While not a complete church-management system, it's an acceptable complement to a general accounting program. Aug 93

★★★ **Sailing Master 1.1, Starboard Software, 313/662-4393, $64.99.** Though the slow speed and jerky motion point to less-than-polished programming, this sailboat-racing simulation offers good tactical play and is fun—well worth the price for sailing competitors. Nov 93

★★★ **Stat-Ref 3.2a (3.2b), Teton Data Systems, 307/733-5494, $95.** Medical database on

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CD-ROM lets you search by keyword. Because it provides access to limited sets of journal citations, it's not suitable for research, but it could effectively replace a small reference library in an office. **Jan 93**

WRITING TOOLS

★★★★ **Final Draft 2.0 (2.0.3), MacToolkit, 310/395-4242, $349.** Script-writing gets simpler with this well-conceived software that automates formatting of different elements in a script. Customization is easy, and macros automate typing of common phrases. **Apr 93**

★★★ **IdeaFisher 2.0, Fisher Idea Systems, 714/474-8111, $595.** Inspiration never comes easily, but this creativity tool with a question bank of 6000 questions and an idea bank of 61,000 words and 700,000 links might help get the juices flowing. **Jan 93**

★★★ **Just Joking 1.0, WordStar International, 415/382-8000, $49.** HyperCard stack of around 2800 humorous quotations offers a serviceable selection of sayings from a diverse group of humorists, comedians, philosophers, and writers, among others. **Apr 93**

★★★ **LetterPerfect for Macintosh 2.1, WordPerfect Corp., 801/225-5000, $149.** Stripped-down version of WordPerfect measures up as a serviceable low-end word processor, with clean, accurate documentation and an uncluttered interface. **Jan 93**

★★★★ **MacWrite Pro, Claris Corp., 408/987-7000, $249.** Many of the new features of this upgrade are very well executed, including the easy-to-use table feature, simple but elegant palettes, and an almost pain-free mail merge feature. **Jul 93**

★★ **MasterWord 5.1, Alki Software Corp., 206/286-2600, $99.95.** The centerpiece of this package of add-on Microsoft Word commands is a set of customizable tool bars. Unfortunately, rough edges remain, including inaccuracies in the documentation and some features that don't work as advertised. **Aug 93**

★★★★ **Microsoft Word 5.1, Microsoft, 206/882-8080, $495.** Small, solid upgrade fine-tunes some plug-in modules and adds new modules including an icon tool bar and text annotation. It is worth the upgrade price, but it won't give Word 5.0 users goosebumps. **Mar 93**

★★★ **RightWriter for the Mac 5.0, Que Software, 317/573-2500, $99.95.** Grammar checker looks at writing style, word usage, punctuation, and capitalization, as well as grammar. Customizable filters and multiple approaches to analysis are nice, but—as with all grammar checkers—not all the advice is great. **May 93**

★★★ **ShowScape 4.1, Lake Compuframes, 914/941-1998, $429 to $679.** This script-writing software formats scripts in either screenplay format or dual-column format (for audio and video) and allows you to choose the number of shots displayed per page, but it requires you to own and work in WordPerfect. **Apr 93**

★★★ **Spelling Coach Professional 4.0.1, Deneba Software, 305/596-5644, $195.** If you're considering investing in reference software, this spelling checker, dictionary, and thesaurus is a relatively capable, if expensive, alternative. **Oct 93**

★★★★ **Thunder 7 1.5.3, Baseline Publishing, 901/682-9676, $99.95.** Stand-alone spelling checker and thesaurus interactively monitors your keystrokes and alerts you to potential errors as they are entered. It quickly and transparently prevents you from making embarrassing typos. **Nov 93**

★★★ **TypeReader 1.0, ExperVision, 408/428-9988, $695.** Speed and accuracy combine with a straightforward operating style in this high-end OCR software that doesn't do everything its competition does, but is a major contender nonetheless. **Feb 93**

★★★ **VersionMaster 1.5, AStar Technologies, 508/486-8532, $199.95 to $1199.95.** Document-management utility helps you archive and track versions of a file by maintaining a database of altered documents. It's recommended only for workgroups that routinely follow check-out procedures. **Apr 93**

★★★ **WordPerfect for Macintosh 2.1 (2.1.3), WordPerfect Corp., 801/225-5000, $495.** Play QuickTime movies in your text files or publish and subscribe

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Circle 142 on reader service card

MACWORLD Star Ratings

with this upgrade. It continues to provide the best desktop publishing and graphics capabilities of any word processor, but it lacks glossary- and table-creation features. Jun 92

★★★★ **WriteNow 3.0, WordStar International, 415/382-8000, $119.** The streamlined approach of this low-end word processor will appeal to many Macintosh users, especially the storage-conscious. A nice mix of features includes impressive style sheets. Sep 92

★★★ **A Zillion Kajillion Rhymes 1.0, Eccentric Software, 206/628-2687, $49.95.** Rhyming dictionary is quick, small, simple, and self-contained; but it only rhymes with the roots of search words (and ignores *-ed*, *-s*, and *-ing* endings). Nov 93

Hardware

INPUT DEVICES

★★ **Apple Adjustable Keyboard, Apple Computer, 408/996-1010, $219.** Keyboard is only a slight improvement on the flat slab keyboard. Theoretically, it corrects ulnar deviation, but sufferers of repetitive stress injuries want a keyboard that adjusts vertically. Jul 93

★★★★ **ArtZ ADB Tablet, Wacom Technology Corp., 206/750-8882, $449.** Combining pressure-sensitive operation, manageable size, and a new pencil-thin stylus, this affordable digitizing tablet is perfect for artists looking for traditional-style control of their graphics programs. Aug 93

★★★ **Computer Crayon, Appoint, 510/463-3003, $49.** The kid contingent's verdict was a definite thumbs-up on this brightly colored input device that's shaped like a thick pencil. The buttons can be hard for smaller children to press, and serious computer artists should still opt for a drawing tablet. Oct 93

★★ **Gulliver, Appoint, 510/463-3003, $119.** This diminutive mouse is hard to hold comfortably for an extended period, but it works well on almost any surface, including fabric, wood, plastic, and paper, making it an acceptable alternative for PowerBook users. Oct 93

★★★ **The UnMouse, MicroTouch Systems, 508/659-9000, $199.** Input device is a cursor-control device, programmable keypad, and small graphics tablet in one, and can be programmed with 60 macros (although only 16 can be selected by sight). It's ergonomically better than a mouse, but not as good as a trackball. May 93

★★★ **Z-Nix Cordless SuperMouse, DynaPoint, 818/854-6440, $99.** Sleek and attractive cordless mouse works reliably and is attractively priced, but suffers from the same line-of-sight limitations as other infrared devices (such as TV remote controls). Dec 92

MISCELLANEOUS HARDWARE

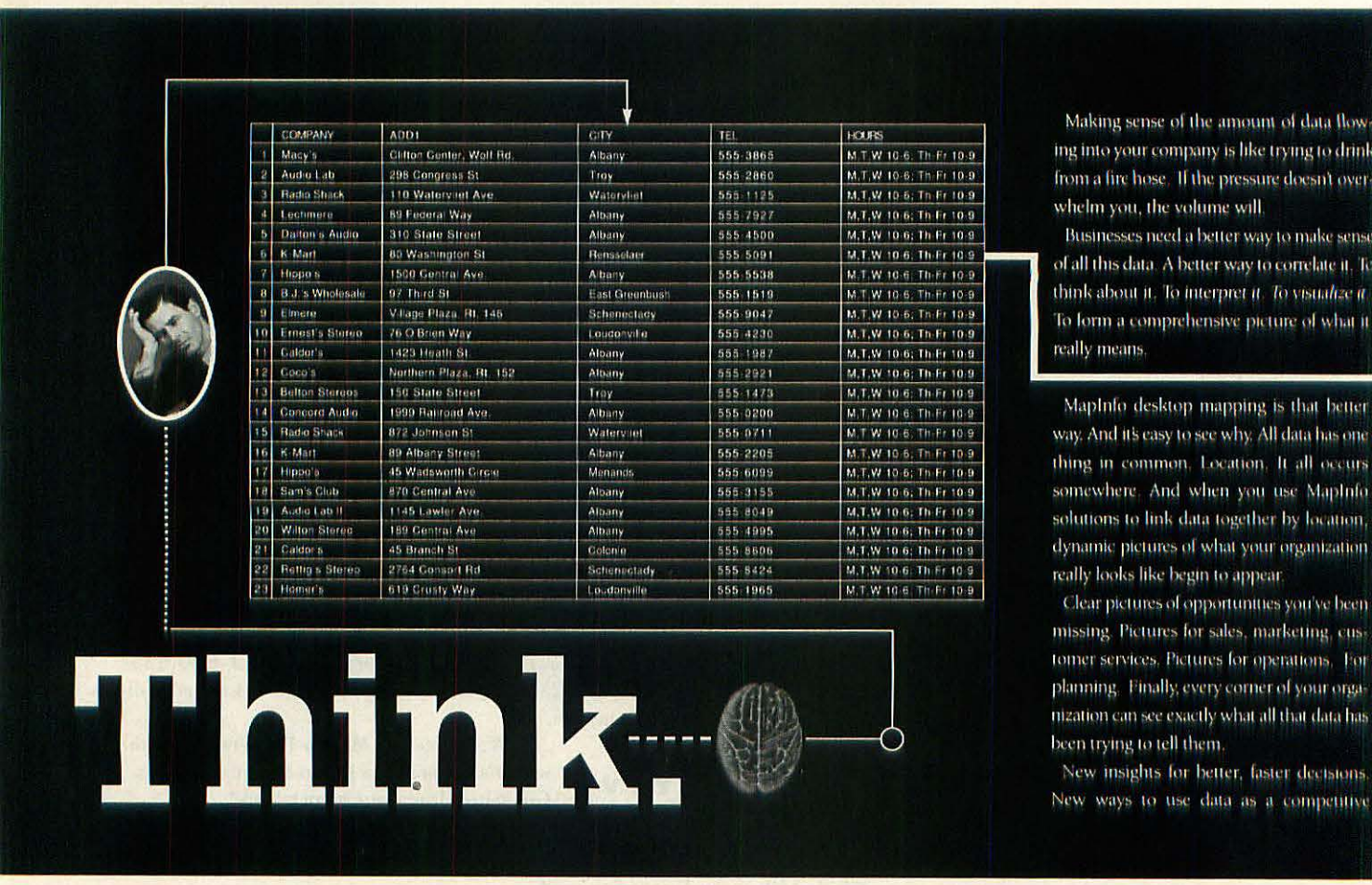
★★ **Address Express, CoStar Corp., 203/661-9700, $795.** Flaky performance and system crashes plagued this envelope-and-label printer in our tests, but the print quality was good. Oct 93

★★★★ **Apple Color OneScanner, Apple Computer, 408/996-1010, $1349.** Tests of this color scanner demonstrate unpolluted colors and sharp image details, perhaps due to color filters and lenses that Apple claims were specially designed and tuned for the scanner. Jul 93

★★★★ **AppleCD 300, Apple Computer, 408/996-1010, $599.** Double-speed CD-ROM drive spins its discs at twice the speed of earlier drives, providing faster access to large files. Jun 93

★★★ **EMBARC, Embarc Communications Services, 407/364-2000, $395 plus fees.** If you're a PowerBook user who is frequently in places with no telephone and you need timely delivery of electronic news and E-mail, this portable wireless message service may prove useful, but the cost may be prohibitive to others. Sep 93

★★★★ **Epson ES-800C, Epson America, 310/782-0770, $1499; Macintosh interface kit $399.** Flexible 400-dpi scanner offers a range of options, including one- or three-pass scanning, plus a full-featured, easy-to-use software package. Aug 93



★★★★ **Media Control Station 1.0 (1.01), JLCooper Electronics, 310/306-4131, $269.95.** This versatile tool connects to the Mac through an ADB port and offers an easy and intuitive way to cue and edit QuickTime movies, MIDI files, multimedia playlists, and other dynamic data. **Feb 93**

★★★ **mira 35, Santos Technology, 310/320-8888, $2695.** This 35mm slide scanner puts many sophisticated color-correction tools into a low-cost package. It does have trouble resolving extremely fine details, and its color correction is RGB only. **Oct 93**

★★★★ **The Mouse Yoke, Colorado Spectrum, 303/225-6929, $34.95.** Gadget turns an ordinary *mechanical mouse* into an aircraft-style steering wheel, or yoke, for use with flight simulators. Simple, elegantly executed concept uses quality materials. **Dec 92**

★★★ **Organizer Link II (Model OZ-893), Sharp Corp., 800/321-8877, $129.99.** If you own a 5000-, 7000-, or 8000- series Sharp Wizard, this program and cable let you connect it to a Mac serial port to exchange data. It's functional, but has some minor weaknesses. **Jan 93**

★★★ **PhonePro 1.0.3 (1.1.5), Cypress Research Corp., 408/752-2700, $950.** Application makes it relatively easy to develop a multiple-choice voice-mail system using your Mac, especially for those with programming backgrounds. The product includes a 9600-bps modem and a headset/microphone. **Feb 93**

★★★★ **PowerKey 2.0 (2.01), Sophisticated Circuits, 206/485-7979, $119.** Ingenious, automated power strip has four surge-protected outlets controlled by the keyboard's on/off switch. The clever software can turn on a Mac, unattended, run a QuicKeys macro (QuicKeys Lite included), and shut down again. **Dec 92**

★★★ **PowerLink Presentor, E-Machines, 503/646-6699, $499.** Simple, compact Duo dock wobbles a bit when plugged in but provides fine support for a variety of displays, plus ports for ADB, floppy drive, and sound output. **Nov 93**

★★★ **ScanPlus Color 6000 for Mac, PlusTek USA, 408/980-1234, $749 to $899.** Small, inexpensive sheetfed color scanner is not appropriate if exact color matching is critical, but it is otherwise a good, economical option. **Sep 93**

★★★ **Yamaha TG100, Yamaha Corp. of America, 714/522-9011, $449.** Compact, keyboardless, multitimbral MIDI synthesizer adheres to the General MIDI standard patch arrangement. Although it won't convince you that you're hearing a live orchestra, the sound is about as realistic as low-cost MIDI gets. **Apr 93**

MODEMS/NETWORK HARDWARE

★★★ **DataLink PB; Axcell Cellular Interface, Applied Engineering, 214/241-6060, $824.** If you need a full-blown office on the beach, this PowerBook cellular-modem package with automatic answering machine is a well-executed solution. Each recorded second requires 25K of disk space. **Nov 93**

★★ **EtherPrint 1.0 (2.0), Dayna Communications, 801/531-0600, $499.** It's possible to connect a single LocalTalk printer to an Ethernet network using this device, but it's an expensive option. **Dec 92**

★★★ **EtherPrint Plus, Dayna Communications, 801/531-0600, $599.** Support four LocalTalk products on an Ethernet network using this device that can also serve as an inexpensive AppleTalk router. **Dec 92**

★★★★ **EtherWrite, Compatible Systems Corp., 303/444-9532, $695.** Elegant and cost-effective device with excellent network-management software allows up to six LocalTalk products to connect to an Ethernet network. **Dec 92**

★★★★ **PathFinder, Dayna Communications, 801/531-0600, $899.** For simple networks, this LocalTalk-to-Ethernet router is a great value, as well as a great time-saver for beginning network managers. It uses AppleTalk only. **Jan 93**

★★★ **PerFit Port-A-Com, PerFit, 303/530-7333, $349.** Compact, ADB-powered, high-speed fax/data modem is difficult to configure, due to its Spartan and poorly organized documentation, but is still a solid product

continues

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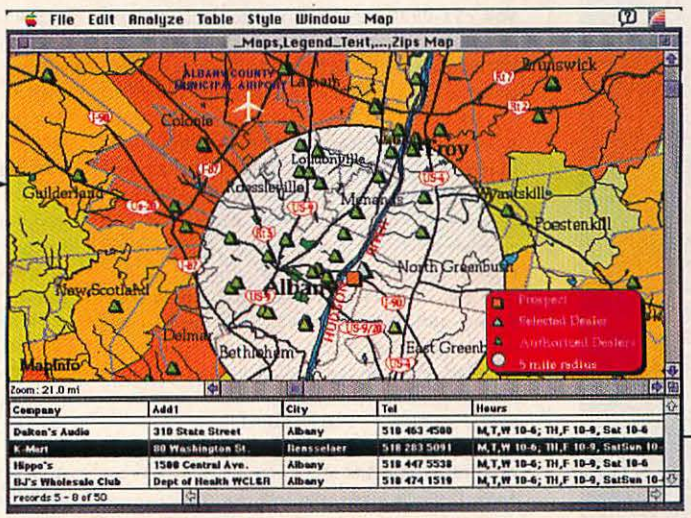

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MACWORLD Star Ratings

at a reasonable price. **Nov 93**

★★★★ **PowerPort/Gold, Global Village Communication, 415/329-0700, $499.** If you need 14,400-bps throughput, this data/fax modem is a champ. Its improved software and packaging raise the standards for PowerBook modems. **Dec 92**

★★★★ **Sportster 14,400 Fax/Data Modem, U.S. Robotics, 708/982-5001, $329.** Several nice features, including an easily accessible power button and a front-mounted volume-control dial, make this 14,400-bps fax/data modem better than average. **Feb 93**

★★★ **SupraFaxModem 144PB, Supra Corp., 503/967-2400, $349.95.** If you're looking for a high-speed internal modem for your PowerBook, and want to save a few bucks, this modem is worth your consideration. Disabling its fax software helped solve occasional transfer problems. **Nov 93**

★★ **Viva 14.4/Fax, Computer Peripherals, 805/499-5751, $299.** In data mode, this 14,400-bps fax/data modem performed well, but the software bundled with it is barely adequate. **Jan 93**

★★ **WorldPort 9600 MNP5, U.S. Robotics, 708/982-5001, $499.** Only slighter larger than a deck of cards, this 9600-bps modem is geared toward PC users, with a user guide that never mentions Macs and software that is only for PC compatibles. **Jan 93**

PRINTERS

★★★ **Apple Color Printer, Apple Computer, 408/996-1010, $2349.** If you need large-format color output, but not precision color-matching, this well-built printer is a reasonable choice, although it doesn't support PostScript. **Aug 93**

★★★★ **DEClaser 1152, Digital Equipment Corp., 508/493-5111, $999.** Four-pages-per-minute, 300-dpi, PostScript Level 2 printer offers simultaneous support for Macs and PCs, plus excellent image quality, for a ground-breaking price. **May 93**

★★★★ **HP LaserJet 4M, Hewlett-Packard, 800/752-0900, $2399.** An Intel i8960 RISC processor makes printing complex images faster than ever with this 600-dpi printer, while the Canon LBP-EX print engine and microfine toner guarantee smooth curves and crisp characters. **Feb 93**

★★★ **LaserWriter Pro 600 and 630, Apple Computer, 408/996-1010, $2099 to $2529.** From their paper handling to their print quality, these laser printers are Apple's best. Unfortunately, they don't support emulation-sensing, and thus may be less desirable for mixed-platform offices than other possibilities. **Jun 93**

★★★★ **LaserWriter Select 300, Apple Computer, 408/996-1010, $839.** Inexpensive, low-capacity printer is networkable, and an excellent buy, despite a few weaknesses. Add a 4MB SIMM to take advantage of the amazing PhotoGrade capabilities, which allow the printer to generate 91 shades of gray. **Aug 93**

★★ **LaserWriter Select 310, Apple Computer, 408/996-1010, $1099.** This big, slow printer is a true Adobe PostScript printer with both Mac and DOS ports, but it's not networkable or compatible with the Communications Toolbox, it can't automatically switch ports, and it doesn't have adjustable paper guides. **Aug 93**

★★★ **Phaser 200i Color Printer, Tektronix, 503/682-7377, $5995.** This thermal-wax color printer is fast and compact, with versatile paper-handling features. TekColor image-enhancement technologies provide excellent output quality that is, however, poor on letterhead and inexpensive photocopier bond. **Aug 93**

★★ **PrintPartner 10W, Fujitsu Computer Products, 408/432-6333, $2450.** While this multiplatform printer is fast and prints clearly, many Mac users will find it frustrating. It can't print some TrueType fonts. **Jul 93**

★★★★ **StyleWriter II, Apple Computer, 408/996-1010, $359.** Apple's ink-jet printer retains the best features of its predecessor, but costs less. New features, such as gray-scale printing and the ability to share the printer over a network, make it even more versatile. **Jun 93**

★★★ **WideWriter, GCC Technologies, 617/275-5800, $1699.** Large-format output is reasonably priced with this ink-jet printer that can automatically feed sheets as large as 14 by 91 inches or manually feed sheets 17 inches wide with an unlimited length. **Feb 93**

★★★ **WriteMove II, GCC Technologies, 617/275-5800, $599.** Portable printer for the PowerBook measures 11½ by 2 by 3½ inches and weighs 2½ pounds. It's no speed demon, but it's fine for short jobs. **May 93**

SYSTEMS/STORAGE

★★★★ **DataPak 105, Mass Microsystems, 408/522-1200, $949 to $1049.** *Well-built 105MB* SyQuest drive comes with a decent, no-frills cartridge-formatting package and a copy of 7th Heaven. The preformatted cartridges have a lifetime warranty. **Sep 93**

★★★★ **FastCache Quadra, Daystar Digital, 404/967-2077, $299 to $449.** PDS board provides 128K of secondary cache for a Quadra. The average real-world speed improvement is 15 percent, but some operations benefit more from the cache card than others. **May 93**

★★★★ **Infinity 105 Turbo, Peripheral Land, 510/657-2211, $795 to $894.** *Small, light, quiet,* inexpensive 105MB SyQuest drive is ingeniously packaged and ideal for both desktop and PowerBook use. **Sep 93**

★★★ **Infinity Optical 3.5, Peripheral Land, 510/657-2211, $1999.** If you need the extra measure of permanence that magneto-optical storage provides—or a compact alternative to bulky cartridges—this drive, based on a Sony mechanism and using 3½-inch disks that store 120MB of data, deserves a look. **Jun 93**

★★★ **Macintosh Centris 610, Apple Computer, 408/996-1010, 4/80 $1859.** Slim-design Mac uses a 20MHz 68LC040 processor at a price-to-performance ratio that comes close to competing with Windows PCs; however, its expandability is severely limited. **Jun 93**

★★★★ **Macintosh Centris 650, Apple Computer, 408/996-1010, 4/80 68LC040 $2699.** Moderately priced but fast 040 system offers three expansion slots and one drive bay, and (except for the base model) has built-in Ethernet, video circuitry, and a math coprocessor. This desktop Macintosh is as powerful as a Quadra 700. **Jun 93**

★★★ **Macintosh Duo Dock, Apple Computer, 408/996-1010, $1079.** Clever housing for Duos provides back-panel connectors, a SuperDrive, support for external monitors, and two expansion slots. Some details, such as the difficulty of installing NuBus boards, belie Apple's usual attention to detail. **Mar 93**

★★★★ **Macintosh LC III, Apple Computer,**

continues

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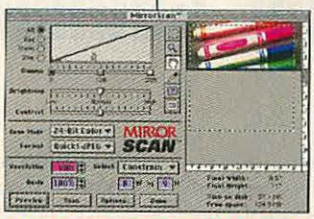

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11. I certify that the statements made by me above are correct and complete. Adrian Mello, Editor

MACWORLD

Star Ratings

408/996-1010, 4/80 $1349. Base system comes equipped with a 25MHz 68030 processor and 512K of VRAM. This is a machine that fits the bill and the pocketbook of most home or small-business owners. **Jul 93**

★★★ **Macintosh PowerBook 145, Apple Computer, 408/996-1010, 4/40 $2149.** Adequate but essentially outdated notebook computer is an upgraded version of the discontinued PowerBook 140 with a faster 25MHz 68030 CPU. **Feb 93**

★★★★ **Macintosh PowerBook 160, Apple Computer, 408/996-1010, 4/40 $2429.** A built-in video port and gray-scale capability are the new features Apple offers with this notebook computer. While it offers good processing speed and power, the passive matrix display doesn't cut it for all-day use. **Feb 93**

★★ **Macintosh PowerBook 165c, Apple Computer, 408/996-1010, 4/80 $3399.** The passive matrix screen of this color notebook computer is dull and has noticeable afterimages, but if your expectations are reasonable, the speedy processor provides a pleasant environment in which to work. **Jul 93**

★★★★ **Macintosh PowerBook 180, Apple Computer, 408/996-1010, 4/80 $4109.** An active matrix screen and a math coprocessor are the only differences between this notebook computer and the PowerBook 160, but the beautiful display is worth the extra $1000. **Feb 93**

★★ **Macintosh PowerBook 180c, Apple Computer, 408/996-1010, 4/80 $4169.** The active matrix screen of this color notebook computer is beautiful but so small that its usefulness is very limited. **Sep 93**

★★★★ **Macintosh PowerBook Duo 210 and 230, Apple Computer, 408/996-1010, 210 (4/80) $1839, 230 (4/80) $2299.** Apple's smallest computers have the pleasing heft of hardbound books but pack the horsepower of 030 chips. Although the screen, keyboard, and trackball feel small, these computers virtually cry out to be picked up and used. **Mar 93**

★★★★ **Macintosh Quadra 800, Apple Computer, 408/996-1010, 8/230 $4679.** Squat, yet curvy and attractive, this minitower system has fewer expansion opportunities than the Quadra 950, but just as much power. It's fast, slick, and moderately priced. **Aug 93**

★★★ **MicroMac Plus Upgrade System, MicroMac, 714/362-1000, $998.** This 68030 accelerator for the Mac Plus requires disassembling a Plus and using the Plus system board to assemble the MicroMac system. It speeds up the Plus dramatically, and supports an included external full-page monochrome monitor. **Jun 93**

★★★★ **MultiDisk 150, Iomega, 801/778-1000, $1225.** Durable cartridges are one of the strongest reasons to choose this Bernoulli removable drive. Although it's slightly more expensive than a SyQuest drive, it's fast and reliable, and the disks are competitively priced. **Jun 93**

★★★ **OrangePC, Orange Micro, 714/779-2772, $1799.** NuBus board has a DOS processor, letting you have your Mac and a PC, too. It's fairly well executed, though there are some minor problems. **Oct 93**

★★★ **PLI MiniArray 850MB, PLI MiniArray 2GB, Peripheral Land, 510/657-2211, $4999, $6999.** These RAID storage systems contain multiple drives that work as a single unit; they're an excellent option for image processing or tasks that involve importing and exporting large files, but the price per megabyte is high. **Jan 93**

★★★ **SmartStack, Envisio, 612/628-6288, SmartSource $119; SmartModules $289 to $1379.** The SmartStack line of modular storage peripherals may be neatly stacked on top of a common power supply to reduce desktop clutter and cabling problems. **Sep 93**

VIDEO/DISPLAY

★★★ **BookView Imperial, Computer Care, 612/371-0061, $1399 (includes 6MB of RAM).** This notebook-display adapter supports all common sizes of monitors, including 16-inch and 19-inch, plus both Mac and VGA. It is expensive, however, and uses 2MB of system memory for video processing. **Feb 93**

★★★ **Dycam Model 3, Dycam, 818/998-8008, $895.** Low-end, digital still camera is easy to use, and is a solid product if Instamatic grade gray-scale meets your image quality requirements. **Sep 93**

★★★ **Editing Aces Suite, RasterOps, 801/785-5750, $3899.** Video professionals and serious (or rich) QuickTime enthusiasts can record and play back full-screen movies in 24-bit color with 16-bit CD-quality sound with this collection of products. Despite flaws, such as a limit of 320-by-240-pixel resolution, this package represents a praiseworthy step forward in QuickTime technology. **Nov 93**

★★★ **L-TV, Lapis Technologies, 510/748-1600, $349.** Interface board allows a Mac LC, LC II, or Performa to use a standard television monitor as a display device. Unfortunately, a standard TV is a poor substitute for a color monitor, so while the L-TV does its job adequately, the setup is unsuitable for many applications. **May 93**

★★★ **Lightning Effects II, Spectral Innovations, 408/955-0366, $1295.** *Digital-signal-processor* chips dramatically speed up some Photoshop operations with this expensive Photoshop-acceleration board. It had problems acquiring some JPEG files. **May 93**

★★★ **PaintBoard Turbo, RasterOps, 408/562-4200, $1499.** Midrange video board supports 24-bit color on monitors up to 17 inches and resolutions as high as 1024 by 768 pixels. If you can live without changing resolutions on the fly, it's a reasonably good deal. **Oct 93**

★★★ **Power Portrait, Sigma Designs, 510/770-0100, $899 or $949.** Hook your Classic or PowerBook to this 15-inch portrait-style monochrome display. Built-in QuickDraw acceleration speeds up the slow SCSI connection on the one hand and results in a few software incompatibilities on the other. **Feb 93**

★★★★ **PowerVision, Mirror Technologies, 612/633-4450, $499 to $999.** Separate VRAM means you don't lose system memory with this nicely priced notebook display adapter. It only supports 12-inch and 14-inch monitors, and 15-inch portrait gray-scale and black-and-white monitors. **Feb 93**

★★★★ **ThunderStorm, SuperMac Technology, 408/245-2202, $699.** Photoshop-acceleration board uses digital-signal-processor chips to speed up some Photoshop operations. It's fast, with good JPEG compatibility and a great manual. **May 93**

★★★★ **VideoSpigot, SuperMac Technology, 408/245-2202, $449 to $1299.** Grab video from a camcorder, video deck, TV, or monitor with this easy-to-install board and save it as a 24-bit QuickTime movie. **May 92**

★★★ **VideoToolkit 2.0.1, Abbate Video, 508/376-3712, $279.** Despite a few rough edges, this is an attractive, inexpensive solution for those who need to catalog and edit videotapes on a budget. **Sep 93** m

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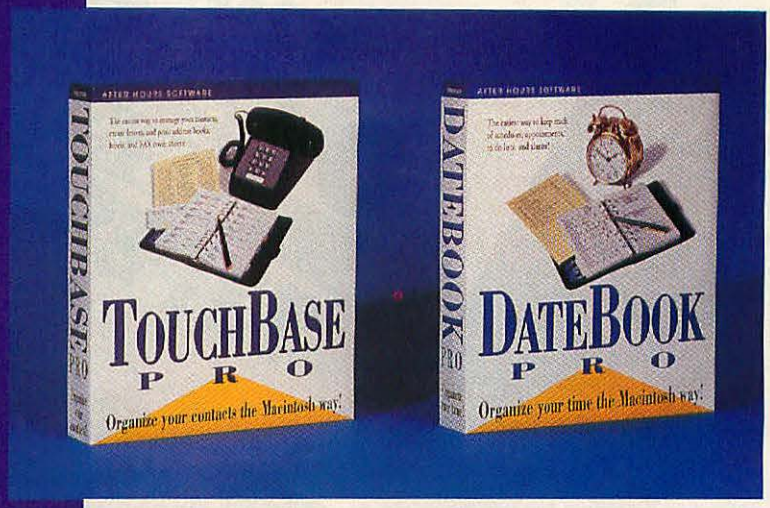

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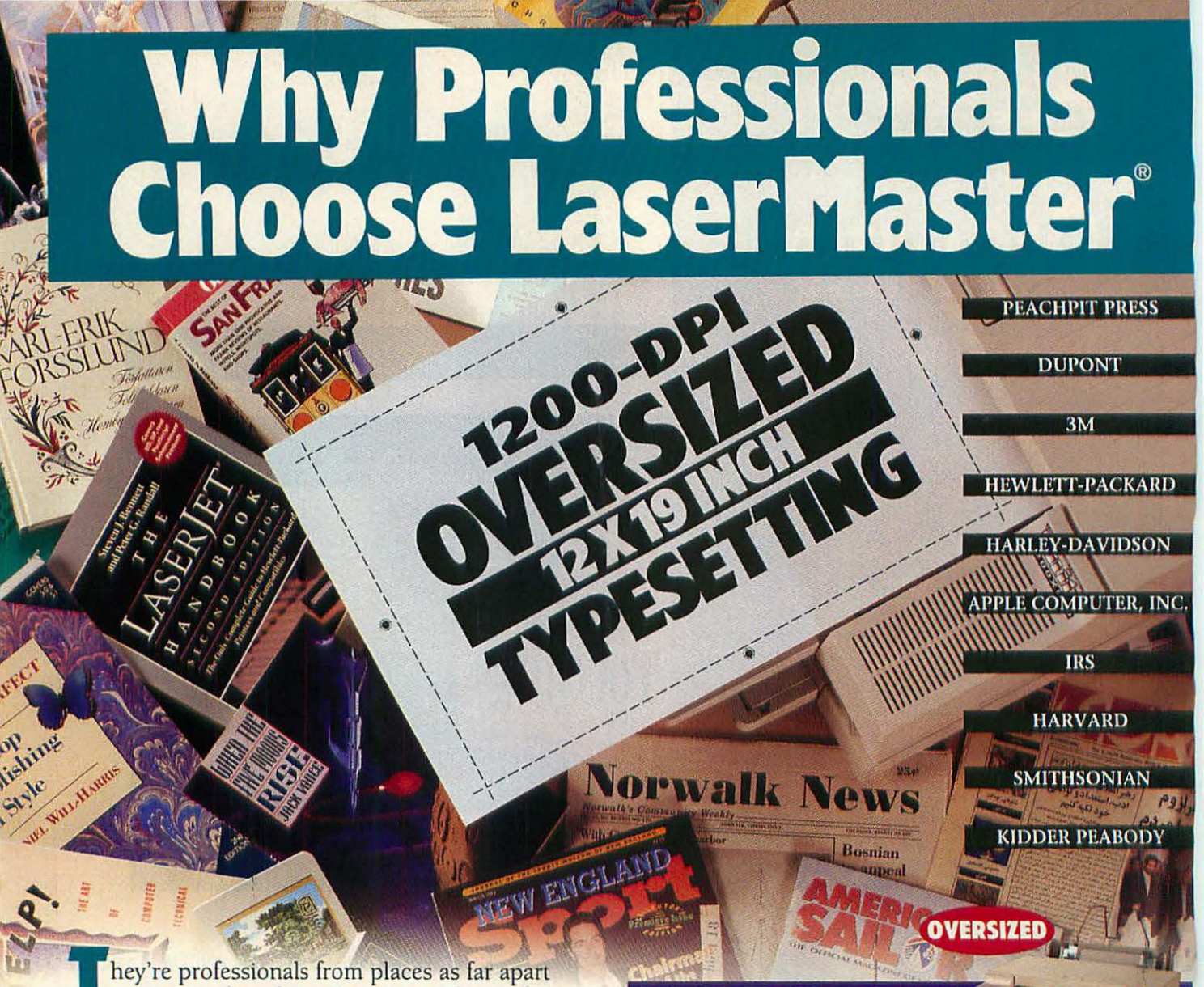

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Streetwise Shopper

SPECIAL HARDWARE AND SOFTWARE BUYING OPPORTUNITIES

Selected and edited by Charles Barrett

These special product promotions are being sponsored by Macintosh vendors and resellers for a limited time only. When ordering a product, please be sure to tell the vendor or reseller that you saw the promotional offer in *Macworld*. Should any problems arise, please inform the *Streetwise Shopper* editor by fax (415/442-0766), phone (415/978-3241), or mail (*Macworld*, 501 Second St., San Francisco, CA 94107).

Listings indicate the star rating awarded in *Macworld*'s *Reviews* (products rated ★★ or lower are not eligible to be listed), if the product has been chosen as an **Editors' Choice**, and if it has won a **World-Class** award. In some cases, the editorial evaluation quoted is for an earlier product version.

BUNDLES

APS PowerBook Drive + APS PowerBalls APS Technologies is offering four precision PowerBook trackball replacements (Dec 93 *Desktop Critic*—"stunningly useful stocking-stuffers")—in neon green, orange, yellow, and hot pink—for $9.99 (regularly $19.99) when you buy any APS PowerBook drive (Nov 93 "Jumbo PowerBook Storage"—"you really can't go wrong with any of these drives"). Available direct (800/723-2080). *Offer expires 11/30/93.*

ClubMac Epson 3½-inch Optical Drive + Cartridge ClubMac is including a free cartridge (regularly $35) with its 128MB Epson OMD 5010 optical drive (Dec 93 "Optical Options" Editors' Choice—good tech support, has good manual, and exhibits high performance"). Available direct (800/258-2622) for $849. *Offer expires 12/31/93.*

ClubMac Sharp 5¼-inch Optical Drive + Cartridge ClubMac is including a free cartridge (regularly $89) with its 650MB Sharp JY-750 optical drive (Dec 93 "Optical Options" Editors' Choice—"without question the best bargain among 5¼-inch drives"). Available direct (800/258-2622) for $1799. *Offer expires 12/31/93.*

FileGuard 2.7 + TrashGuard 1.0 + FileDuo 1.0 ASD Software is offering its $249 FileGuard password-protection product (Feb 93 "Data Guardians"—"a strong product"), $79 TrashGuard shredder utility, and $149 FileDuo automatic backup program. Available through MacWarehouse (800/225-6227) for $149.95 (regularly $278 when products sold separately). *Offer expires 1/31/94.*

Lind PowerBook Battery + PBTools 1.1 Lind Electronic Design is including Inline Software's $99.95 PBTools utility (Jul 93 ★★★ for version 1.01—"basic PowerBook management without added frills or complex menu-bar displays") free with its replacement battery for all PowerBooks with NiCad batteries, including the latest color units. Available direct (800/659-5956) for $69.95. *Offer expires 12/31/93.*

Random House CD-ROM + Hardcover Dictionaries The Mac Zone is including a $100 hardcover copy of the *Random House Unabridged Dictionary* free with the purchase of the $100 CD-ROM version of this dictionary, which now includes more than 320,000 entries and 1000 new words. Available through The Mac Zone (800/248-0800) for $62.98. *Offer expires 12/31/93.*

COMPETITIVE UPGRADES

Drive 7 2.3 Casa Blanca Works is offering this $79.95 universal drive-formatting utility (Jan 93 ★★★—"easy enough to use to make hard drive maintenance almost relaxing") to users of any other drive formatter for $39.97 ($29.95 in the case of OEM product Drive 7 Lite users who wish to upgrade to the full version). To qualify, fax manual cover (415/461-2249) or send master floppies (148 Bon Air Center, Greenbrae, CA 94904). *Offer expires 1/31/94.*

Lotus 1-2-3 1.1 The Mac Zone is offering Lotus's $495 spreadsheet program (Apr 92 ★★★★ for the initial release—"comparable to Excel in many respects and better in some key areas") to users of any other spreadsheet package. Available direct (800/248-0800) for $98.98. For $119, Fifth Generation Systems' $189 Disklock 2.12 encryption plus access-protection program (see Feb 93 "Data Guardians") and the Lite edition (does not work on PowerBooks or Duos) of Snooper 2.0, the $249 hardware-diagnosis utility, are also included. *Offer expires 1/31/94.*

DISCOUNTS/REBATES/FREE OFFERS

AAIS Full Control Prolog 3.1 Advanced A.I. Systems is offering this $495 interactive, object-oriented development system of the Prolog programming language, which includes 680 pages of documentation and almost 15,000 lines of code, direct (415/948-8658; fax 415/948-2486) for $199. *Offer expires 12/31/93.*

Caduceus Physics, Chemistry, Biology Scientia is offering these fully animated $130 HyperCard stacks to prepare students for the Medical College Admission Test (Jan 93 ★★★ for Caduceus Physics 1.0—"I'd recommend [it] in a minute") direct (617/776-3427) for $70 each. The complete $250 Caduceus Project four-stack set (which also includes Organic Chemistry) is $125. *Offer expires 2/30/94.*

Finale 3.0; Finale Allegro 1.0 Coda Music Technology is offering a $100 rebate on its $749 Finale (academic edition not eligible) music-notation program (Dec 93 ★★★★—"the new standard against which all other music-notation products must be judged"; 1992 World Class), and a $50 rebate on its brand-new $349 Finale Allegro midrange version, when purchased in the U.S. or Canada after 10/15/93. Call 800/843-2066 for nearest authorized reseller and proof-of-purchase requirements. Offer expires 12/15/93.

Interactive Training for Macromedia Director Media in Motion is offering this $199, self-paced, Director-authored courseware (Jun 93 for ★★★—"approaches its topic in a clear, lighthearted manner") direct (415/621-0707; fax 415/621-1724) for $99. *Offer expires 12/31/93.*

Kai's Power Tools 2.0 HSC Software is offering a special introductory price on the latest version of this $199 collection of plug-in extensions for Adobe Photoshop, Fractal Design Painter, and other programs (May 93 ★★★★ for version 1.0—"no one who uses Photoshop regularly should be without this amazing tool"). Available for less than $100 through CompUSA (800/451-7638), Computer City (800/826-3928), Egghead Software (800/344-4323), and other national resellers. *Offer expires 12/31/93.*

Microsoft Office 3.0 Tutorial Personal Training Systems is offering a $50 rebate on this $399 interactive, self-paced tutorial (includes a 90-minute audiocassette and practice disk with lesson files for System 7 and Microsoft Excel, Word, and PowerPoint) when purchased after 10/25/93. Available for $100 (including rebate) through Apple Catalog (800/795-1000), MacConnection (800/800-2222), MacWarehouse (800/255-6227), and The Mac Zone (800/248-0800). Send dated sales receipt to PTS at 828 S. Bascom Ave., #100, San Jose, CA 95128. *Offer expires 12/31/93.*

Mr. File 2.0 Softways is offering this $99 Finder-alternative utility (Dec 93 ★★★★—"well-designed background capabilities make it a handy desk accessory for a good [list] price") direct (408/978-9167; fax 408/448-0620) for $29.95 (plus $4.95 S&H). *Offer expires 12/15/93.*

Multiple Master Typefaces Adobe Systems is offering any of its nine $95 to $275 Multiple Master typeface packages (Jul 92 ★★★★★ for Myriad typeface—"exceeds all previous ideas of electronic font perfection") direct (800/445-8787) for $89 each. Also, ITC Avant Garde Gothic, Tekton, and Minion typeface customers can upgrade to Multiple Master versions for $49 each. *Offer expires 12/31/93.*

Planet Color 1.0 LizardTech is offering this $199 multimedia image-compression and 24-bit-to-8-bit conversion program (including a free $49.99 upgrade to the next version) direct (505/989-7117; fax 505/989-9292) for $75. In addition to the capabilities of LizardTech's Fast Eddie product, Planet Color adds palette manipulation and batch processing. *Offer expires 12/31/93.*

Roadrunner DataXpress External Case Kit Microtech International is offering users who upgrade their PowerBook internal drives this new home for their original 2½-inch drive. The case runs on standard AC power or the included rechargeable battery, permitting five hours of mobile operation. Available direct (800/626-4276 or 203/468-6223) for $139 (regularly $159). *Offer expires 11/30/93.*

ultraShield 1.255 usrEZ Software is offering a $20 rebate (on receipt of registration card and dated sales invoice) on this $149 password- and access-control program (Dec 93 ★★★★—"combines practically every security feature you might need in one integrated package") when purchased after 10/15/93. Available through resellers including MacWarehouse (800/255-6227), The Mac Zone (800/248-0800), Mac's Place (800/367-4222), and Dr. Mac (800/825-6227). *Offer expires 12/31/93.* m

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Assist/Connectix CPU Bundle Item RAE11 $178
Assist/Connectix CDU Bundle Item RAE12

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Say you saw it in Macworld. To purchase products advertised in this issue, call the phone numbers below or use the reader service number for our FastFacts Product Information Card located on the next page.

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30-31	Aldus	—	800/685-3517
251	Aldus Consumer Division	145	800/367-8911
61	Alsoft	98	800/378-0432
219-220	America Online	—	—
6	Anthro	—	800/325-3841
203-210	Apple	—	—
237	Apple	—	—
47-49	Apple	—	—
128-129	Applied Engineering	167	800/554-MACS
164	ASD Software	170	909/624-2594
46	Avery Dennison	197	800/462-8379
28	Berkeley Systems	84	800/248-0800
54	Caere Corp.	69	800/535-SCAN
66	Canon USA	110	800/OKCANON
235-W	Casady & Greene	32	800/359-4920
64	Central Point Software	—	800/277-3873
20	Charles River Analytics Inc.	18	800/913-3535
198	Checkmark Software	34	800/444-9922
100-101	Citizen America Corporation	83	800/4PRINTERS
244-245	Coactive Computing Corp.	142	800/825-2NET
180	Color Systems Support (CSS)	9	800/448-8432
215	Compuserve	66	800/848-8199
9	Computer Associates	10	800/225-5224
152	Connectix	189	800/950-5880
21	Contemporary Cybernetics Group	188	804/873-9000
39	Corel Corporation	78	800/836-3729
161	Dantz Development	26	510/253-3000
78	DataViz	79	800/733-0030
212	DataWatch	37	919/490-1277
190	Dayna Communications	161	801/269-7200
32	Daystar Digital	7	800/942-2077
11	Deneba Software	57	800/6CANVAS
150	E-Machines	136	800/344-7274
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8	Engineered Software	12	919/299-4843
90-91	Epson	—	800/BUYEPSON
42-43	Ergodyne	39	800/323-0052
7	Fifth Generation Systems	134	800/447-8212
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18	Fujitsu Computer Products of America	268	408/748-2944
12	GDT Softworks	42	800/663-6222
233	Graphsoft	46	410/290-5114
195	Harris International	160	800/783-3726
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22-23	Hewlett Packard	—	—
227	Hewlett Packard	—	800/LASERJET
162-163	IDG World Expo	—	—
8	Image Club	50	800/661-9410
99	Insignia Solutions	68	800/848-7677
2-3	Intel Corporation	—	800/395-7009
146-147	Interactive Box Office	92	—
56	Intuit	—	—
88	Iomega	111	800/967-0326
26	Kaetron Software	185	800/938-8900
BC	Kensington Microware Ltd.	—	800/535-4242
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252	LaserMaster	43	800/950-6868
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165-167	Mac Zone, The	70	—
76	MacAcademy	106	800/257-1914
68-73	MacConnection	—	800/800-3333
176	MacTable/Scanco	—	800/722-6263
194	Macworld	—	—
182-187	Macworld Expo SF	—	—
246-247	MapInfo Corporation	11	800/551-6277
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IFC-1	Microsoft	—	800/426-9400
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243	Mirror Technologies	124	800/643-3384
249	Mirror Technologies	125	800/643-4142
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153-160	NEC Technologies	—	800/NEC-INFO
IBC	NEC Technologies	16	800/NEC-INFO
74	Newgen Systems	74/75	800/756-0556
108-109	Now Software	133	800/237-3611
179	Now Software	49	800/237-3611
214	nView Corporation	117	800/736-8439
224	Philips Consumer Electronics	19	800/835-3506
27	Pinnacle Micro	55	800/553-7070
29	Pinnacle Micro	115	800/553-7070
326	PrairieSoft, Inc.	269	515/225-3720
327	Printer Connection	91	714/758-8832
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80	RasterOps	67	800/SAYCOLOR
216	Relisys/Express Direct	262	800/944-8855
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239	Statsoft	99	918/583-4149
145	Supermac	88	800/334-3005
231	Supra	132	800/967-8772
328-329	Syex Express	176	800/289-7939
40	Symantec -Num	—	—
196	Symantec -Sam	—	—
10	T B S P	25	714/721-8603
199	Technöggin, Inc.	94	800/305-7936
173	Tektronix	143	800/835-6100
45	Teleware, Inc.	194	800/851-1315
83	Texas Instruments	—	800/527-3500
85	Texas Instruments	265	800/527-3500
86-87	Texas Instruments	266	800/527-3500
89	Texas Instruments	267	800/527-3500
241	3M Data Storage	38	800/888-1889
62	3M Data Storage	109	800/888-1889
223	Wolfram Research	—	800/441-MATH
132-133	Wordperfect	—	800/526-7820

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For faster results just fax this sheet to +1-413-637-4343. Please indicate your fax number where indicated.

Please answer these questions so that we may better serve you.

A. Including yourself, approximately how many people are employed at your entire work-site (i.e., employees in your office, building, or cluster of buildings)? (Check one.)
- 01 ❑ 1000+
- 02 ❑ 999 - 100
- 03 ❑ 99 - 25
- 04 ❑ Under 25

B. Which of the following computers are installed at this entire work-site? (Check all that apply.)
- 05 ❑ Apple Workgroup Servers/ Mac Quadra-series
- 06 ❑ Mac Centris-series/II-series/LC III/ Performa 600/450/SE 30
- 07 ❑ Mac LC/LC II/Performa 430/405/ 400/200/Classic-series/SE/Plus/ 512K/128K/Portable
- 08 ❑ Mac PowerBook-series/Duo-series

C. What is the total number of Macs installed at this entire work-site? (Check one.)

D. For how many Macintosh computers within this entire work-site do you have purchase involvement for products and/ or services? (Check one.)

	C	D
500+	❑ 09	❑ 15
499 - 100	❑ 10	❑ 16
99 - 50	❑ 11	❑ 17
49 - 10	❑ 12	❑ 18
9 - 1	❑ 13	❑ 19
None	❑ 14	❑ 20

E. In which ways are you ever involved in purchase decisions for Macintosh products at this entire work-site? (Check all that apply.)
- 21 ❑ Initiate/Determine need for product/capabilities/features
- 22 ❑ Evaluate, recommend, or approve brands/models
- 23 ❑ Evaluate, recommend, or approve purchase source
- 24 ❑ Authorize purchases

F. Over the next 12 months, how much will this entire work-site spend on Macintosh products and/or services? (Check one.)
- 25 ❑ $1 million or more
- 26 ❑ $999,999 – $500,000
- 27 ❑ $499,999 – $100,000
- 28 ❑ $99,999 – $50,000
- 29 ❑ $49,999 – $10,000
- 30 ❑ Under $10,000

G. Considering the entire work-site, which of the following Macintosh hardware and software products are currently installed? (Check all that apply.)
- 31 ❑ Business software (Word processing, spreadsheet, database, etc.)
- 32 ❑ Graphics/publishing software
- 33 ❑ Monitors/displays
- 34 ❑ Printers/scanners
- 35 ❑ Networking/communications hardware and/or software
- 36 ❑ Multimedia/AV hardware and/or software
- 37 ❑ Mobile computing products (PowerBooks, peripherals, software, etc.)

H. What is your primary job function? (Check one.)
- 38 ❑ Computer Reseller/VAR/VAD
- 39 ❑ MIS/DP/IS/Network Management
- 40 ❑ Engineering
- 41 ❑ R&D/Scientific
- 42 ❑ Corporate/General Management
- 43 ❑ Accounting/Finance
- 44 ❑ Marketing/Sales/PR/ Communications
- 45 ❑ Art/Design/Creative Services

Thank You!

Please print or type all information.

Title_____

Co._____

Phone_____

Fax_____

Free Product Information

1	2	3	4	5	151	152	153	154	155	
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277	DGR Technologies	65	800/235-9748
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298,299	Mac News	172	800/243-9383
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278,279	Mac Products USA	175	800/MAC-USA1
274-276	Macwarehouse	150	800/255-8227
284	Microtech International	116	800/626-4276
283	Super Micro	126	800/352-3415
292	Texas Instraments	80	800/527-3500
285	Tiger Software	114	800/666-2562
236	Xante	1	800/926-8839

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301	Digital Eclipse	800/289-3374
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301	Battery Technology	800/982-8284
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303	VideoLabs	612/897-1995
PRINTERS		
301	The Print Works	800/225-6116
SYSTEM UPGRADE		
303	MicroMax	714/362-1000
SOFTWARE		
BAR CODE		
302	Bear Rock	800/232-7625
BUSINESS		
302	Globalink	800/767-0035
CD/ROM		
302	Metatec Discovery Systems	800/448-2323
EDUCATIONAL		
302	Discovery Entertainment	800/217-4066
MUSIC		
303	ARS Nova	800/445-4866
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303	TeleTypesetting	617/734-9700
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303	Delphi	800/695-4005

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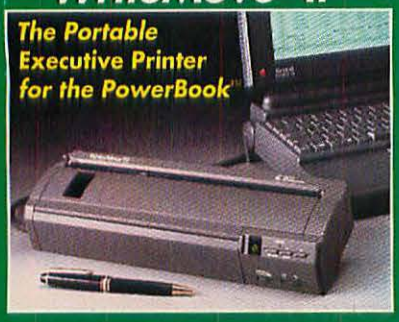

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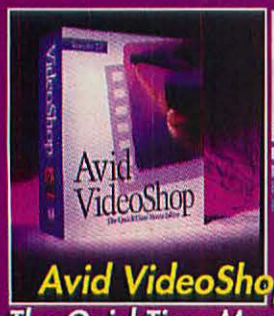

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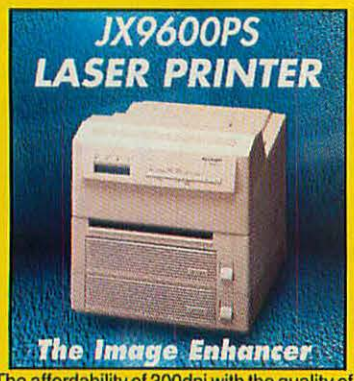

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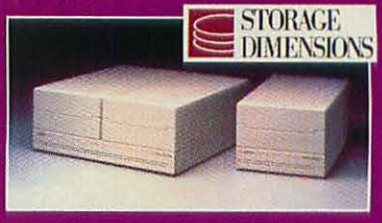

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*Patent pending.

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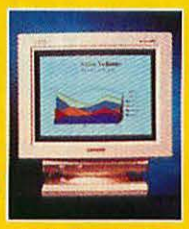

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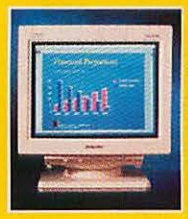

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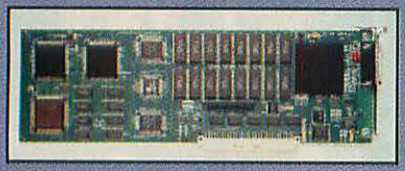

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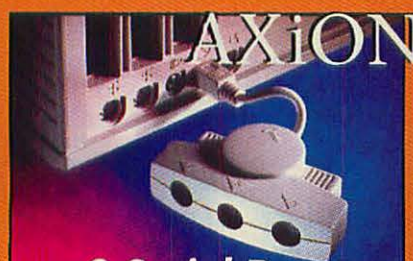

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Asanté Mini EN/SC 10T

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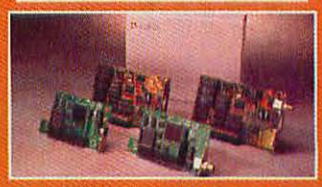

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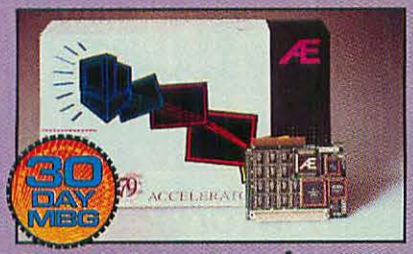

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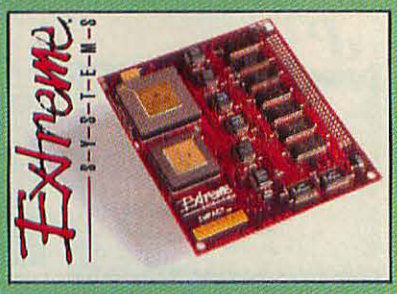

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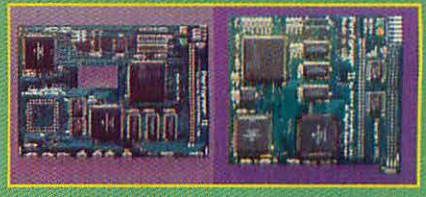

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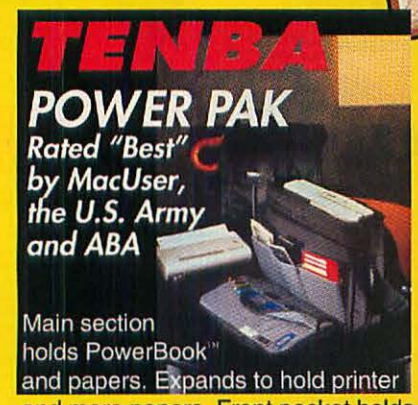

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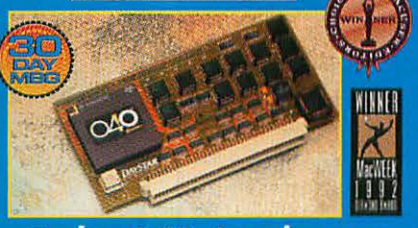

Turbo 040 Accelerator

Turbo 040 is a 68040 accelerator that turbocharges all your software up to 600% faster! Daystar's 040 family of accelerators are the only ones that can guarantee Quadra level compatibility with all standard software and hardware – even at full speed. The new Turbo 040i line gives you 040 power at 030 prices. They use an 040 without floating point support – ideal for most business environments. Adapters required for certain Mac models. THREE YEAR WARRANTY!

Turbo 040 33MHz **$1099**

Turbo 040 40MHz **$1599**
Turbo 040i 33MHz **$799**
FastCache Turbo **$169**

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DUO 12/20	605/1,665

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PLI Infinity 105 Turbo $669

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PLI Multi-Session CD-ROM $609

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PLI 540MB Turbo Internal	949
PLI 1 GB Turbo External	1,459
PLI 1 GB Turbo Internal	1,369
PLI 1.2GB Turbo External	1,629
PLI 1.2GB Turbo Internal	1,459
Quick SCSI NuBus Card	329
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PLI 1GB Disk Array Internal	2,069
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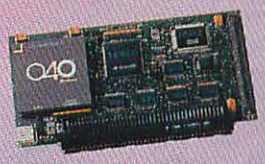

Outperform new Macs with the Speedster!

Apple's Quadra and Centris use the 040, and now you can put '040 power in your Mac for one third the price. Speedster instantly gives Quadra power you'll notice right away. Instant screen redraws in PageMaker. Freehand and QuarkXpress super fast previews with Illustrator speedy recalcs in Excel, and blazing special effects with Photoshop. Optional 128k cache boosts speed another 20-40%.

040 Speedster 25/25 W-FPU	625/799
040 Speedster 33/33 W-FPU	725/889
040 Speedster 40 W-FPU	1,345
Adapters for IIsi,IIcx,IIx,SE/30	49
Optional 128k cache	179

Mobius' 68030 accelerator boosts SE performance 6 to 8 times. Supports up to 16MB, all the performance you need to run even the most powerful applications.

030 -25Mhz SE/Classic	349/419
SE 030 -33 Mhz	389

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040 25/33/40	809/989/1219
Quadralink/W-DMA	209/339
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25 MHz Turbo 040	949
33MHz Turbo 040	1,125
FastCache Turbo 040	172
040i 20Mhz Turbo NO FPU	699
040i 25Mhz Turbo NO FPU	779
040i 33Mhz Turbo NO FPU	869
FastCache Quadra (700/900 Only)	249
FastCache Quadra (ALL QUADRAS)	349
RAM Power Card	430
Charger/ Charger PLUS	505/649

Universal PowerCache

The PowerCache is an award winning design that gives you affordable 68030 performance and the best in compatibility. Just plug it in and go... no downtime and it works with everything. Upgradeable to Turbo 040.

33MHz/33Mhz w/FPU	345/435
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50MHz/50MHz w/FPU	649/759
Adapter Se & Classic/Others	129/105
Combocache IIsi/w/FPU	215/301
Equilizer LC/w/FPU	172/241
DualPort IIsi w/20Mhz FPU	172

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24MxTV	1,649
24XLTV	2,619
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APS HARD DRIVES

Model	Internal	ZFP	SR2000
127MB - 245MB			
APS Q 170[2] Quantum 170 ELS mechanism	$199	$269	$289
APS Q 240[2] Quantum LP240 mechanism	259	329	349
APS MX 245[2] Maxtor 7245 mechanism	259	329	349
345MB - 1.225G			
APS MX 345[2] Maxtor 7345 mechanism	$399	$469	$489
APS Q 525[2] Quantum Lps525 mechanism	649	719	739
APS MX 540[2] Maxtor MXT540 mechanism	799	869	889
APS Q 1050[5] Quantum 1005S mechanism	839	899	919
APS MS 1.2G[5] Micropolis 2112 mechanism	1099	1169	1189
APS Q 1225[5] Quantum 1225P mechanism	$1099	$1169	$1189
1.24G - 3.0G			
APS MX 1240[3] Maxtor MXT1240S mechanism	$1249	$1319	$1339
APS ST 1.6[5] Seagate ST 11950N mechanism	1899	—	1999
APS MS 1.7[5] Micropolis 2217S mechanism	1349	1419	1439
APS ST 2.0[5] Seagate ST 125500N mechanism	2299	—	2399
APS MS 2.4G[5] Micropolis 1926 mechanism	1999	*2099	—
APS MS 3.0G[5] Micropolis 1936 mechanism	2499	*2599	—

Internal drives for Quadra 800 and Centris 610 available.

1-5 *Denotes length of manufacturer's warranty*
**External Case is Full Height Only, not ZFP or SR2000.*

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- **Disk-for-disk replacement warranty** • SyQuest, most Quantum, Maxtor and DAT drives are warranted for two years. WREN, Quantum 2.5" drives, TEAC drives, all CD-ROMs, MOs and SyQuest carts are warranted for one year.
- Prices and specifications subject to change without notice. Refused orders subject to restocking fee.
- **All our hard drives include brackets, cables, cords and LEDs required for operation** with the specified Macintosh. All hard drives from APS Technologies come preformatted with Apple's System 7.0.1 software, at least 9.2MB of compacted publicly-distributable software and APS Technologies' APS POWER TOOLS SCSI formatter/hard disk partitioner.
- All external drive products and cases come with a premium 25 x 50 SCSI cable. Companion drives (not cases) include a 30 x 50 PowerBook SCSI cable.
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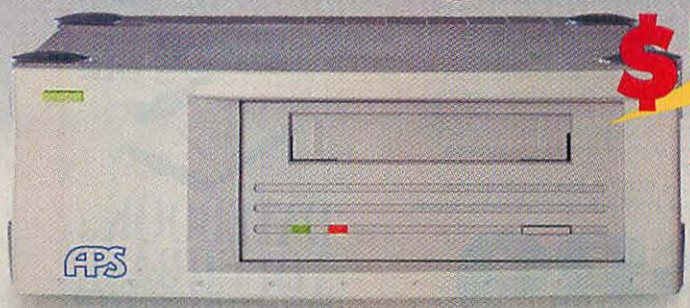

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APS GRS 160[1]	349	299	429
APS T 213[1] Toshiba 2224 mechanism	519	469	599
APS T 340[1] Toshiba 2224 mechanism	704	659	789

APS SCSI BOY & DOC

APS SCSI BOY	$29
APS SCSI DOC	49

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- *Never Get Caught with the Wrong Cable Again!*
- *Dealer Inquiries Welcome*
- *SCSI DOC includes a docking adapter for the Apple PowerBook and termination power indicator.*

DAT

Model	Internal*	External
APS DAT	$749	$799
APS Turbo DAT	1249	1299
APS Hyper DAT	1649	1699

60 meter DAT tape — $12, 10 Pack — $110
90 meter DAT tape — $16, 10 Pack — $130
**Internal models for Quadra 900 and 950*
All APS DAT Drives Include Retrospect by Dantz

TAPE DRIVES

APS T 155 MB Tape Backup	$479

155MB Backup Tapes — $19, 10 pack $180

MAGNETO OPTICAL

Model	Internal*	External
APS 128MB MO	$869	$899

Mechanism is Epson Magneto-Optical OMD-5010
128 MO cartridge — $49

CD ROM BUNDLE

Model	Without Bundle	B.Y.O.B.*
APS T 3401	$499	$399

SYQUEST

Model	MB	External
APS SQ 555	44MB	$339

44MB cartridges — $65 unformatted, $70 formatted

APS SQ 5110c	44/88	499

88MB cartridges — $100 unformatted, $105 formatted

APS SQ 3105	105MB	599

105MB cartridges — $59 unformatted, $64 formatted

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Publisher: Fifth Generation Systems
UTI0447

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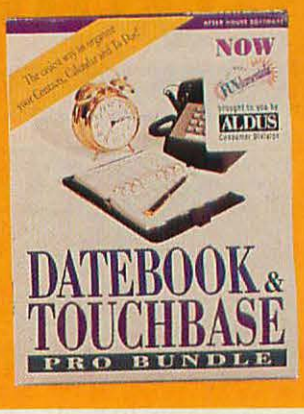
Publisher: Aldus BUS0299

Also available: **TouchBase Pro DAT0104 $49, DateBook Pro BUS0298 $49 and TouchBase Pro/DateBook Pro/Quicken Bundle BUS0349 $99.95**



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CAD0024 $199*
Publisher: GraphSoft

$199*

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Run DOS and NetWare Applications with VGA Graphics on Macintosh Computers. SoftPC is the software only solution that lets you run more than 50,000 standard or custom DOS applications on your Mac. SoftPC PROFESSIONAL runs PC programs which utilize VGA graphics and extended memory. SoftPC PROFESSIONAL has MS-DOS 5.0 pre-installed and is ready-to-run on your Mac.

Requirements: Suitable for the MacII ex, cx, si, fx, PowerBook, Performas and all Quadra computers.

Publisher: Insignia Solutions COM0186

$199.95

Language Explorer

Animate the discovery of language in English, French, German and Spanish. Languages are presented in 42 topics, with over 500 colorful, animated pictures. Simply select a topic and language, then match words to pictures. Five levels of difficulty add new challenges-from the basic exploration of Beginner, to all languages and topics at the Polyglot level! All ages.

Requirements: Color Mac, System 6.0.7 or greater.

Publisher: Nordic Software EDU0490

$32

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He's...back!...in an all new detective game of global pursuit. Two divisions: 1) for children and 2) more challenging one for experienced sleuths. Over 1200 clues-most in rhyme-relating to 61 countries. Piece together a sketch of the criminal in the hilarious Sketch-a-Wretch notebook and pick him out of a lineup. Fully animated in 256 frightening colors or b&w. *Information Please Almanac* included!

Publisher: Mysterium Tremendum ENT0538

$38

Practica Musica 2.4

Practica Musica is an interactive music tutor for both beginning and advanced students. An "Eddy Award" winner with *MacUser's* top "5 mice" rating, it covers both music theory and ear training, works with or without MIDI, and includes a textbook. **MUS0020**

Songworks 1.3

Play a tune with or without MIDI and see it notated automatically! Songworks suggests chords, invents melodies, transposes, plays, prints (one staff of melody, chord symbols, lyrics). "Eddy Finalist," 1992.

MUS0120
Publisher: ARS Nova

$69ea.

WristSaver or WristSaver MousePad

The WristSaver cradles your wrist with a contoured neoprene rubber pad and a washable nylon covering. It's ergonomically designed to support your wrist at the proper angle to help avoid the pain associated with Carpal Tunnel Syndrome. The WristSaver MousePad (8" x 9.5") provides a comfortable rest for your wrist, plus a conventional mouse pad. Simple finger movements replace sliding the entire arm or hand. **Manufacturer: LB Innovators**

ACC0560 WristSaver (Red)
ACC0635 MousePad (Red)
Available in Gray, Black, Red or Navy. Please specify color.

$15ea.

Star Trek 25th Anniversary

Pilot the famous U.S.S. Enterprise on a wild ride through the final frontier. This exciting game combines a realistic 3D space flight simulator with role-playing adventures featuring the Star Trek team. Control phasers, photon torpedoes, shields, communications, warp drives. Beam down to alien worlds. Come face-to-face with dozens of alien races. Complete with musical score and digitized sound effects.

Requirements: Color Mac with 1500K free memory, System 6.0.7 or later.

Publisher: MacPlay ENT0578

$35.95

Crossword Creator

Create crossword puzzles quickly and easily. Just enter the words to instantly generate a puzzle. Build/save dictionaries for use in future puzzles. Includes Roget's Thesaurus with wild card search. Print your puzzles directly or export desktop publishing files. **ENT0440 $39.**

Letter Drop*

Form falling letters into words. Combines hand-eye coordination, vocabulary, and spelling. Fun and challenging for all ages with multiple game variations and levels. Colorful graphics with word-picture association reinforce learning. Use built-in dictionaries or import your own.

ENT0602 $25.95
Publisher: Centron Software

$25.95*

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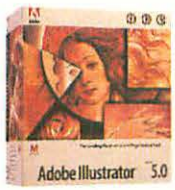

*The price of $375 for Microsoft Office reflects $100 Manufacturer's REBATE by mail direct from Microsoft. Price without rebate is $475. Rebate offer expires 11/30/93. Your Microsoft Office package will include information on how to get your $100 REBATE direct from Microsoft.

(8. PU Double-Speed CD-ROM)

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❼Business Plan Toolkit works with your spreadsheet and contains a menu-driven text guide, financials and business charts, fully-linked forecasts, cash flow, P&L, balance, and ratios. The manual covers not just the software but also the related problems of information gathering, planning and implementation. FIN0116

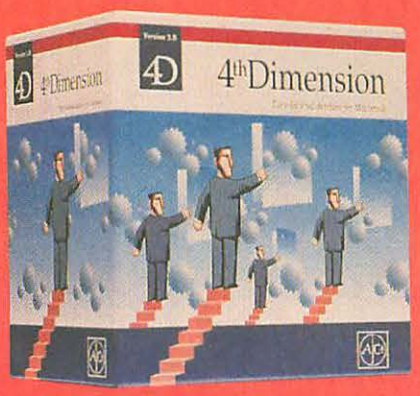
Marketing Plan Toolkit

★★★★½

NEW!

❼Finally! An organized methodology for planning and managing the marketing process from strategy to implementation. *Requirements: Excel, Lotus 1-2-3 or compatible spreadsheet.*
BUS0326
Publisher: Palo Alto Software

$75 ea.



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SID0057

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Publisher: ASD Software
UTI0414

$75

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Publisher: ASD Software
UTI0423

$149.95

FileGuard 2.7-"It's sleek, fast and safe. I highly recommend it." *MacUser*. Protect your hard drive, applications, files, and folders (including System Folder) from erasure, unauthorized access (including security bypass with a System diskette), deletion, and illegal copying.
UTI0135

★★★★½

$139

TrashGuard-Delete files forever, with TrashGuard. Using the Trash Can to delete a file only makes the space available, but does not erase data. TrashGuard not only deletes files, it actually removes them from your hard disk. It even complies with D.o.D. standards! UTI0322 **$49**

FileDuo-Backup your important files quickly and automatically! FileDuo creates backups any time you want: every 5 minutes, at a specific time, or when you shut down your Mac. Backup your choice of files or folders, your entire hard disk or other mounted device.
UTI0323 **$89**

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EDU0337

Eco-Adventures: In the Rainforest

❼This challenging game simulates the environment of a tropical rainforest. With the aid of a guide, maps, and equipment, you'll travel through the rainforest, experiencing the digitized sounds and full color images of endangered species.
EDU0336

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Publisher: Chariot Software

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SPL0029

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GRA0544

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UTI0227

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Publisher: Baseline Publishing
ENT0556

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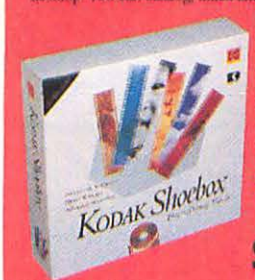

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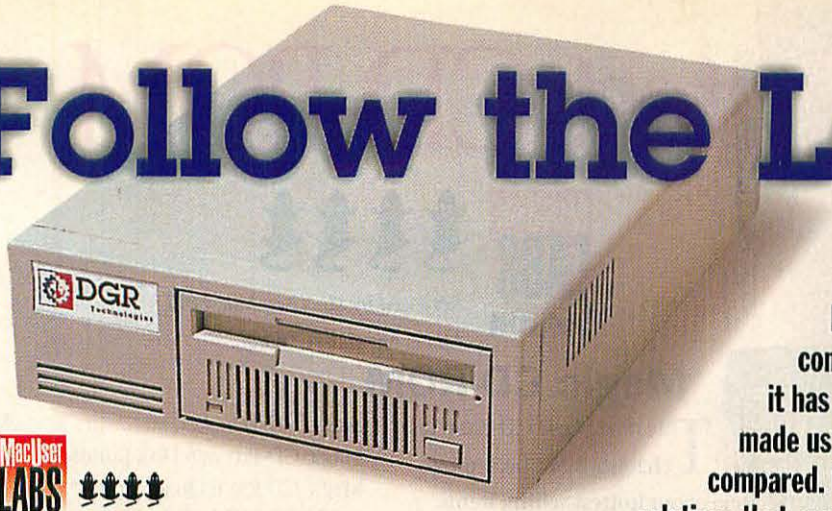

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Bottom Line Pick MacUser August 1993

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MacUser February 1992

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DW3DM0

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World's Fastest CD-ROM

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Reviewed by MacUser, Macworld, MacWeek and PCWorld.

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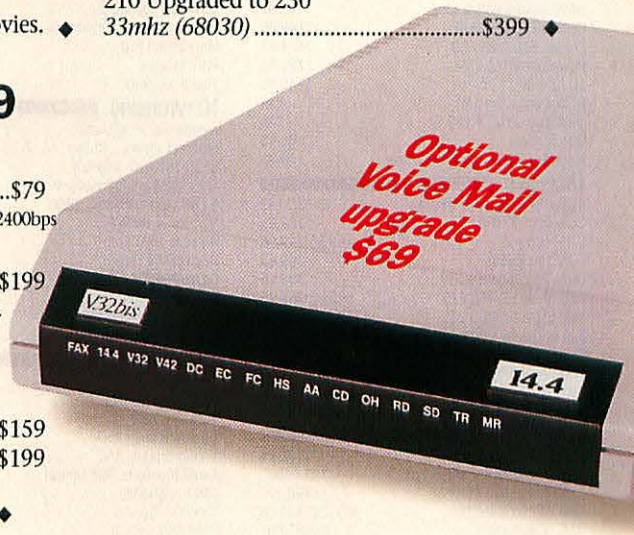

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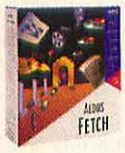

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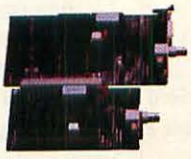

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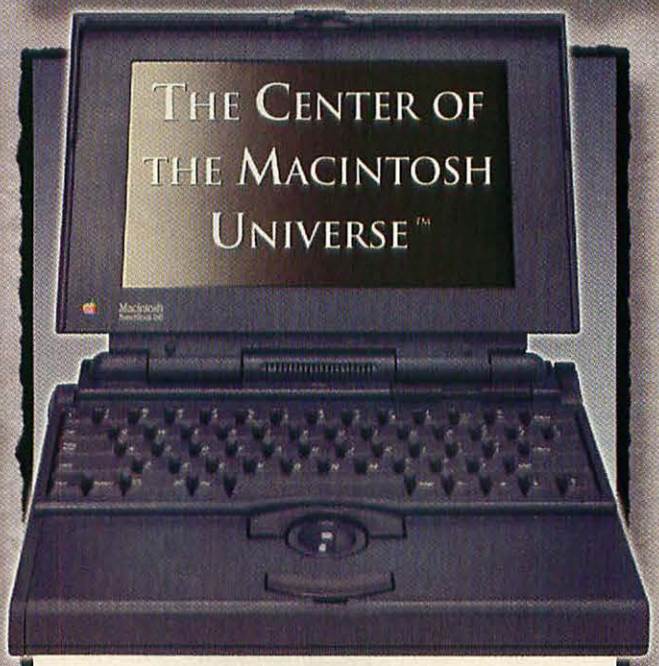

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700MB	3.5" HH 10ms	$775	$835
1000MB	3.5" HH 10ms	$899	$959
1200MB	***3.5" HH 10ms***	***$999***	***$1,059***

Go Drives carry a 1 year warranty / The rest carry a 2 year warranty

Seagate

Capacity	Description	Internal	External
1200MB	3.5" HH 10.5ms	$919	$979
1200MB	5.25" FH 15ms	$969	$1,069
2100MB	5.25" FH 12.9ms	$1,435	$1,535
2100MB	3.5" HH 8ms	$2,099	$2,159
1600MB	***5.25" FH 11.5ms***	***$1,149***	***$1,249***
2400MB	5.25" FH 11ms	$1,765	$1,865
3400MB	5.25" FH 11ms	$2,249	$2,349

Seagate Drives carry a 1 year warranty

Maxtor

Capacity	Description	Internal	External
120MB	3.5" LP 15ms	$194	$254
212MB	3.5" LP 15ms	$259	$329
345MB	3.5" HH 15ms	$429	$499
540MB	3.5" HH 8.5ms	$849	$919
1200MB	***3.5" HH 8.5ms***	***$1,249***	***$1,319***
1700MB	5.25" FH 13ms	$1,299	$1,399

Maxtor 3.5" Drives carry a 1 year warranty
5.25" Drives carry a 2 year warranty

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3.5" Optical Drives

Model	Capacity	Seek	MacKit
Panasonic-128	***128mb***	***35ms***	***$729***
Fujitsu-128	128mb	30ms	$989
Sony-P301	128mb	35ms	$1,269
Most-256	128/256mb	37ms	$1,499

Includes external drive, 25/50 SCSI Cable, Mac SW, and Terminator

Cartridges	
Sony 128mb as low as	$45
Komag 128mb as low as	$33

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5.25" Optical Drives

Model	Capacity	Seek	MacKit
Ricoh-9200EII	594/650mb	66ms	$1,999
Sony-E501	594/650mb	66ms	$1,949
Sony-E502	594/650mb	66ms	$2,049
Ricoh-9200EX	***594/650mb***	***35ms***	***$2,249***
MaxOptix-Tahiti II	594/650/1gb	25ms	$2,799
PMO-650	594/650mb	19*ms	$CALL
MaxOptix-Tahiti IIM	1gb/Worm	25ms	$2,999

Includes external drive, 25/50 SCSI Cable, Mac SW, and Terminator

Cartridges	
Sony 594/650mb as low as	***$119***
3M 594/650mb as low as	$109
Tahiti II 1Gb as low as	$179
OEM 594mb as low as	$99

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SyQuest Drives

Model	Internal	External
SyQuest 105	$499	$559
SyQuest 88C	***$369***	***$409***
SyQuest 88	$309	$369
SyQuest 44	$219	$269

Dual Drives		
SyQuest 88/44	N/A	$678
SyQuest 88/88	***N/A***	***$699***
SyQuest 44/44	N/A	$569

Cartridges	
105MB Cartridges (5+ or with drive Purchase)	***$59.99***
88MB Cartridges (5+ or with drive Purchase)	$89.99
44MB Cartridges (5+ or with drive Purchase)	$59.99

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Tape Drives

Model	Capacity	Size	MacKit
Archive Viper 250	250MB`	3.5"HH	$499
Archive Viper 525	500MB	3.5"HH	$699
Sony SDT-2000	2Gbyte	3.5"HH	$999
Sony SDT-5000	***5-16Gbyte***	***3.5"HH***	***$1,799***
Archive Phython	2Gbyte	3.5" HH	$984
Archive Turbo	2-8 Gbyte	3.5" HH	$1,249
HP 35470A	2Gbyte	3.5"HH	$1,199
HP 35480A	3-5Gbyte	3.5"HH	$1,299
Exabyte 8200	2Gbyte	5.25"FH	$1,599
Exabyte 8500	5Gbyte	5.25"FH	$2,599
Exabyte 8205	2-5Gbyte	5.25"HH	$1,654
Exabyte 8505	5-10Gbyte	5.25"HH	$2,375

Includes external drive, 25/50 SCSI Cable, MAC Softbackup II, and Terminator
Retrospect 2.0: Add $75

Tapes			
Sony DAT	$22	Maxell 8mm	$19

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CD-ROM Drives

Kodak Compatible

Model	Description	MacKit
Texel	Multi Session/Dual Spin	$439
Toshiba 3301	***Multi Session/Single Spin***	***$299***
Toshiba 3401	Multi Session/Dual Spin	$459
Pioneer 600	6 Disc/Single Spin	$899
Pioneer 604	6 Disc/Dual Spin	$1,199
PM CDR	CD-ROM Recorder	$3,499

Includes external drive, 25/50 SCSI Cable, Mac SW, Caddy, and Terminator

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Monitors

Model	Description	Price
SuperMac	20" Trinitron HiRes	$2,739
SuperMac	21" Trinitron	$2,379
SuperMac	20" Trinitron Multi Mode	$2,539
SuperMac	20" Trinitron Dual Mode	$2,439
SuperMac	20" Plus Color	$1,639
SuperMac	***17" Trinitron***	***$1,039***
RasterOps	21" Color Display	$2,289
RasterOps	20" Multiscan Trinitron	$2,289
RasterOps	20" Multiscan Color	$1,519
Relysis	16" Color	$689
Relysis	***14" Color***	***$349***

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Printers

Model	Description	Price
Dataproducts		
LZR-960	300dpi, 9ppm, RISC, 8.5x11	$1,049
LZR-965	600dpi, 9ppm, RISC, 8.5x11	$1,799
LZR-1560, 1 Tray	***400dpi, 15ppm, RISC, 11x17***	***$2,799***
LZR-1580	400dpi, 15ppm, RISC, 11x17	CALL
NewGen		
NewGen 660B	***600dpi, 9ppm, RISC, 11x17***	***$3,799***
NewGen 1200	1200dpi, 9ppm, RISC, 11x17	$4,899

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Quantum 525	$629	$699
Quantum 1050	$969	$999

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8GB	120M	8-12GB	22+MB/min

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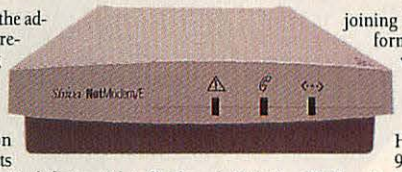

Shiva pioneered the advanced dial-in remote networking techniques for AppleTalk networks – and today, their second-generation networking products (with special PowerBook features) handle the most demanding jobs in corporate America.

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TeleBridge. If you don't already use AppleTalk Remote Access software for dialing in to the office network, check out the Shiva TeleBridge. Plug in your existing modem and the TeleBridge is your connection to not only dial-in and dial-out communications, but also network-to-network connections whereby two distant LANs can be connected as one. The TeleBridge is a complete modem server ready to plug directly to the nearest LocalTalk cable – no need for another Mac.

Dial-In/Dial-Out & Net-to-Net Routing. If you like the idea of distant coworkers keeping in touch by calling in from anywhere in the world and connecting to the office network as if they were sitting at their own desk, you're ready for all the advantages of a network modem. Do you like the idea of any network user in the office easily calling out to CompuServe or Dow Jones for the latest updates in an instant? If the answer is yes, you're in the market for a network modem. And when you gather all the facts, there really is only one way to go – the Shiva NetModem/E (for Ethernet) and the Shiva NetModem V.32 (for LocalTalk).

NetModem/E. The Shiva NetModem/E does it all; just plug this sleek, compact communication server with built-in 14,400 bps modem into the nearest Ethernet cable and it's ready. Nothing else is required. The NetModem/E takes the place of a computer, high-speed 14.4KB modem and Ethernet board – at a fraction of the cost. Besides saving money you get instant, trouble-free connectivity, simple clean wiring, and a very small size.

NetModem V.32. For LocalTalk, twisted-pair networks, the Shiva NetModem V.32 delivers three communication essentials – allowing distant computers to dial in and have full access to all network services, letting any Mac on the network call out to information services; joining far-off networks to form a single internetwork over a standard phone line. NetModem V.32 combines a Hayes-compatible 9600 bps modem and built-in LocalTalk – eliminating the need for a dedicated Mac as a modem server.

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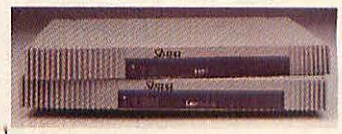

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BHU6588 **LanRover/8E (8 port)** **$2,639.90**
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BHU6587 **FastPath 5** **$1,889.90**
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Oh, by the way, Parnelli Jones has a couple of sons ready to win you more races at better than zero to 100 in 4 1/2 seconds.

Thank you, Jim Joiner

...the fastest high quality output I have ever seen, like an Indy car, XANTE's Accel-a-Writer 8100 is designed to win races." **Jim Joiner**, U.S. Motorsports, Redondo Beach, Calif.

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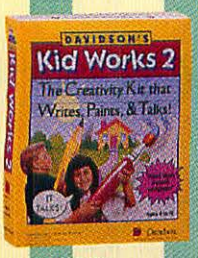

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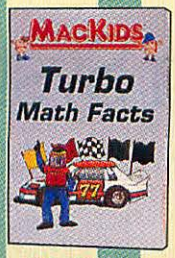

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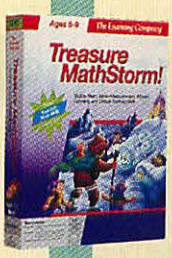

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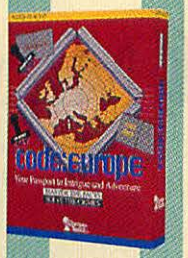

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HARD DRIVES

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CAPACITY	SIZE	ACCESS	INTERNAL	EXTERNAL
520MB	3.5"	9MS	$ 595	$ 655
1.2GIG	3.5"	8.5MS	$ 850	$ 910
2.4GIG	5.25"	11.5MS	$ 1550	$ 1610

Seagate — 5 YEAR WARRANTY

283MB*	3.5"	16MS	$ 339	$ 399
344MB	3.5"	12MS	$ 451	$ 511
600MB*	3.5"	10.5MS	$ 889	$ 949
1.2GIG	3.5"	9MS	$ 919	$ 979
1.6GIG*	5.25"	15MS	$ 1289	$ 1348
2.2GIG*	5.25"	12MS	$ 1439	$ 1539
2.4GIG	5.25"	11MS	$ 1760	$ 1860
2.4GIG	3.5"	9MS	$ 1695	$ 1755
2.5GIG	3.5"	8MS	$ 2039	$ 2099
3.4GIG	5.25"	10MS	$ 2390	$ 2490

HITACHI — 5 YEAR WARRANTY

CAPACITY	SIZE	ACCESS	INTERNAL	EXTERNAL
1.2GB	3.5"	11.8 MS	$ 999	$ 1049
1.6GB	3.5"	11.8 MS	$ 1539	$ 1599
3.7GIG	5.25"	12.8 MS	$ 2789	$ 2889

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TAPE BACKUP SYSTEMS

INCLUDES TAPE + RETROSPECT SOFTWARE — 2 YEAR WARRANTY

CAPACITY	MODEL	MEDIA	INTERNAL	EXTERNAL
250MB	Sankyo CP-150	DC6250	$ 415	$ 475
500MB	Sankyo CP-525	DC6250	$ 565	$ 625
750MB	Exabyte 2501	DC2750	$ 626	$ 686
1.3-2GIG	Archive 4320*	4MM	$ 1109	$ 1149
1.3-8GIG	Archive Turbo*	4MM	$ 1299	$ 1359
1.3-2GIG	Exabyte 4200*	4MM	$ 999	$ 1059
1.3-5GIG	Exabyte 8205	8MM	$ 1506	$ 1659
1.3-10GIG	Exabyte 8505	8MM	$ 2224	$ 2379

CD ROMS

1 YEAR WARRANTY

Toshiba 3401	Unparalled speed and reliability. Fully integrated audio, double speed drives, MPC compliant, and supports Multi-session photo CD.	$ 475
T 3028	Multi-session photo CD, 265MS access time, SCSI II, Dual Speed, Audio Output, self cleaning lens mechanism	$ 419
Sony CDU-561	Multi-session photo CD, double speed, Fully integrated audio.	$ 405

With one of our drives, you can pick and choose your title or bundle from our largeselection. All our CD titles are only $25.95. A purchase of two or more titles saves you an additonal $2 per title.

Ricoh Playwright 1000 Recordable CD $ 3899

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Macintosh Systems

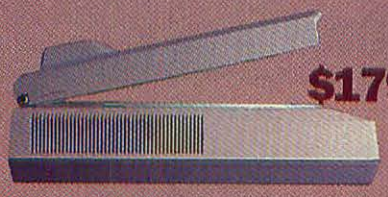
Whether you need a system for high-end color publishing, professional pre-press applications, desktop design and production or simply business productivity – Express Direct can custom configure a Mac System that's right for your specific job and right for your budget.

And remember, all Macs aren't created equal! At Express Direct we do more than take orders and ship boxes. We install the memory, video card and system software. Then we test every System – so all you need to do is plug it in! And only Express Direct gives you Toll-Free Technical Support with every Mac!

$2199

Apple Centris 650
8MB RAM, 230 MB HD, includes Ethernet & FPU. • Add E-Machines 16" trinitron display with accelerated 24 bit color card, Apple Ergo Adjustable Keyboard & System 7.
Complete System $4099

Call about new Quadras!



$1799

The Umax UC1260 offers incredibly accurate 1200 dpi scanning in 1 to 24-bits of color. Shown with optional transparency adapter.

UMAX

From affordable 24-bit color at under $900, to top-of-the-line, 1200 dpi performance, Umax offers a scanner for every need and budget. With Adobe Photoshop for image editing and manipulation and an optional transparency adapter for scanning slides and transparencies, Umax scanners bring professional power to the desktop!

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The new high-resolution, edge-to-edge Newgen Imagen 6L produces 600 dpi, 11x17" production quality output.

newgen

Newgen's superior engineered products bring high-resolution, "service-bureau-like printing" to the personal printer. Newgen's proprietary Image Enhancement Technology produces incredibly crisp output normally found in printers at twice the price. And patented Auto Recognition Technology allows all Newgen printers to be attached to multi-platform networks for maximum flexibility and compatibility.

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b Call

E-Machines razor-sharp T16II (a) & the affordable accelerated 24-bit color interface, Futura SX (b).

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E-Machines is unquestionably the best value in color. Offering an unmatched combination of performance and price, E-Machines video cards give you all the features and speed – at half the price. Plus E-Machines displays have set the industry standard for quality. Now you can have the performance you demand at a price you can afford.

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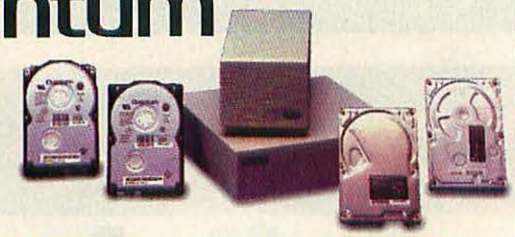
Quantum

30 DAY MONEY BACK GUARANTEE



GO•DRIVE SERIES
2.5" POWERBOOK DRIVES

Capacity	Access	Internal	External
80mb	17ms	$209	$309
120mb	17ms	$265	$365
160mb	17ms	$265	$365

LPS SERIES
3.5" LOW PROFILE

Capacity	Access	Internal	External
240mb	10ms	$249	$309
525mb	10ms	$615	$675

LPS, ELS and PRO drives carry a TWO Year Warranty.
GO•DRIVES carry a ONE Year Warranty.

ELS SERIES
3.5" LOW PROFILE, LOW POWER

Capacity	Access	Internal	External
42mb	19ms	$99	$159
85mb	17ms	$165	$225
127mb	17ms	$185	$245
170mb	17ms	$189	$249

PRODRIVE SERIES
3.5" HALF HEIGHT

Capacity	Access	Internal	External
700mb	10ms	$749	$809
1.0GIG	10ms	$899	$959
1.2GIG	10ms	$999	$1059
1.8GIG	10ms	$1249	$1309

FIVE YEAR WARRANTY

FUJITSU

30 DAY MONEY BACK GUARANTEE

Unformatted Capacity	Model	Description	Access Time	Actual MAC Capacity	Internal	External
230mb*	M2637	2.5" Low Profile	15ms	220mb	$489	$549
520mb	M2624	3.5" Half Height	9ms	496mb	$615	$675
1.2GIG	M2694	3.5" Half Height	8.5ms	995mb	$959	$1015
2.4GIG	M2654	5.25" Full Height	11.5ms	2000mb	$1699	$1799

* One Year Warranty

CLUBMAC OPTICAL DRIVES

SHARP 5.25"
650 MB OPTICAL DRIVE

- Low-profile 5-1/4" half-height drive
- 40 ms seek time
- 652 MB maximum memory capacity
- Built-in SCSI interface (SCSI 1 or SCSI 2)
- High data reliability
- Includes ONE optical cartridge and ONE Year Warranty
- Internal solutions available

$1799 Sharp 650mb EXT

MACWORLD MW EDITORS' CHOICE December 1993 ClubMac Sharp 5.25" Magneto Optical

Part Number	Model	Capacity	Description	Seek	Internal	External
CMO-DynaMo	Fujitsu	128mb	3.5" LP	35ms		$929
CMO-M2511A	Fujitsu	128mb	3.5" LP	35ms	$899	$929
CMO-3D3000	Teac	128mb	3.5" HH	45ms	$769	$799
CMO-OMD5010	Epson	128mb	3.5" HH	45ms	$849	$879
CMO-JY750	Sharp	594/652mb	5.25" HH	40ms	$1769	$1799
CMO-5031E	Ricoh	594/652mb	5.25" FH	28ms		$2199
CMO-C1716T	HP	1.3GIG	5.25" FH	24ms		$2729
128mb / 600mb / 1.3GIG Cartridge						$35 /89 / 109

All ClubMac Opticals include ONE cartridge and ONE Year Warranty.

SYQUEST REMOVABLE DRIVES

44MB REMOVABLES

ClubMac 44mb Ext.	$299
ClubMac 44mb Int.	$259

88MB REMOVABLES

ClubMac 88c Ext.	$459
ClubMac 88c Int.	$419

105MB REMOVABLES

ClubMac 105mb Ext.	$549
ClubMac 105mb Int.	$509

$299 44 MB Ext.

$549 105 MB Ext.

FEATURING

SyQuest® REMOVABLE TECHNOLOGY

CARTRIDGES
44mb/88mb/105mb $59/$89/$59

SyQuest Drives include a TWO Year Warranty, one cartridge & necessary cables, SCSI Director™ Formatting Utility. SyQuest Cartridges carry a ONE Year Warranty.

30 DAY MONEY BACK GUARANTEE

Seagate

30 DAY MONEY BACK GUARANTEE

Unformatted Capacity	Model	Description	Access Time	Actual MAC Capacity	Internal	External
3.5" HALF HEIGHT						
1.2GIG	ST11200N		10.5ms	1000mb	$899	$95
2.4GIG	ST12400N		9ms	2000mb	$1609	$166
1.9GIG	ST11950N	*Barracuda 1*	8ms	1350mb	$1549	$160
2.4GIG	ST12550N	*Barracuda 2*	8ms	2050mb	$1864	$192
5.25" FULL HEIGHT						
1.6GIG	ST41651N	Wren-8	15ms	1350mb	$1149	$124
2.1GIG	ST42100N	Wren-9	12.9ms	1900mb	$1409	$150
2.4GIG	ST42400N	**Elite-2**	11ms	2050mb	$1685	$178
3.4GIG	ST43400N	**Elite-3**	11ms	2750mb	$2115	$221

Seagate drives carry a ONE Year Warranty.

CLUBMAC TAPE BACKUP SYSTEMS

Bundled with RETROSPECT 2.0

Capacity	Model	Media	Internal	External
TAPE BACKUP SYSTEMS				
155mb	Teac MT2ST/N50	CT600N	$429	$44
600mb	Teac MT2ST/F50	CT600F	$629	$64
DAT TAPE BACKUP SYSTEMS				
2.0GIG	Archive Python	4mm	$959	$97
3-5GIG	Archive Turbo DAT*	4mm	$1229	$124
2.0GIG	Hewlett Packard 35470A	4mm	$1179	$119
3-5GIG	Hewlett Packard 35480A*	4mm	$1259	$127

All ClubMac Tape Backup Systems include ONE cartridge and ONE Year Warranty. * Data Compression

NEC CD-ROMs Solutions

MACWORLD MW EDITORS' CHOICE October 1992 NEC CDR-74

$399 Multi-Spin 74-1

NEC MultiSpin 74-1	$399	$49
NEC MultiSpin 38	$269	$36

w/ burn

CLUBMAC CD BUNDLE OVER $800 VALUE

NEC CD-ROMS carry a TWO Year Warranty.

Toolworks Encyclopedia | U.S. Atlas | Mayo Clinic | The Animals | World Atlas | Lucas Game Pack II

E-Machines T16 II

- 640 x 480 up to 1024 x 768
- Comp. with on-board graphics on the Quadra and Centris

MacUser Magazine January 1993

E-MACHINES

E-MACHINES MONITORS

ColorPage T16II	$1259
E-Machines E20 Dual Mode Color Display	$1635
E-Machines T20 Multi-Mode Color Display	$2495

E-MACHINES GRAPHIC CARDS

24-Bit Futura SX / MX	$355 / 799
24-Bit Futura II SX / LX	$429 / 775
24-Bit Ultura LX	$1619

SUPERMAC

MONITORS

SuperMac High Res 20	$2749
SuperMatch 21"	$2379
SuperMatch 20T Multimode XL	$2539
SuperMatch Plus 20" Color	$1649
SuperMatch 17T	$1049

MULTIMEDIA

Video Spigot NuBus / Pro NuBus	$365 / 999
Spigot & Sound NuBus / Pro NuBus	$479 / 1125

24-BIT GRAPHIC CARDS

Thunder/24	$2159
ThunderLight	$1669
Spectrum/24 PDQ Plus / Series IV	$1459 / 789

8-BIT GRAPHIC CARDS

Thunder/8	$1129
Spectrum 8•24 PDQ / PDQsi	Call

ACCELERATORS

ThunderStorm / Deluxe / Pro	$429 / 835 / 2675

BUY A NEC 6FG WITH A MACFG 24X & GET A MULTISPIN 74-1 FREE

*Purchase a NEC 6FG with a MacFG 24X and get a NEC MultiSpin 74-1 from NEC, via mail-in coupon, offer ends 12/31/93

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15" MultiSync 3FGe	$599
15" MultiSync 4FGe	$719
17" MultiSync 5FGe	$1099
17" MultiSync 5FG	$1299
21" MultiSync 6FG	$2349
MacFG 24X /24Xp	$1199/479

PRINTERS

Silentwriter 1097	$1439
Silentwriter 95f	$899
Silentwriter 97	$1119
Silentwriter 95fx	$1139
Silentwriter 97fx	$1349

NEC

GLOBAL VILLAGE POWERPORT (for PowerBooks)

Bronze / Silver / Gold	$165 / 299 / 359

GLOBAL VILLAGE TELEPORT (External Desktop)

Bronze / Silver / Gold	$105 / 299 / 359

PSI MODEMS

PowerModem I / II / III / IV	$105 / 225 / 319 / 359
Comstation I / Comstation V	$169 / 425

SUPRA MODEMS

SupraFaxModem 14.4 LC V.32bis, V.42bis w/FAXstf & Micro	$165
SupraFaxModem 14.4 V.32bis, V.42bis Standalone	$235
SupraFaxModem 14.4 V.32bis, V.42bis w/FAXstf & Micro	$289
SupraFaxModem PB 14.4 V.32bis, V.42 Internal for PB	$299
SupraFaxModem PB+ 14.4 V.32bis, V.42bis, VOICE Int for PB	$395
Supra 2400 Baud External Modem	$69

MODEMS

NETWORKING

ASANTÉ

OTHUB/12	10BT Hub w/12 10T, Thk & Thn ports $479
OTHUB/8	10BT Hub w/8 10T, Thn port $239
Mini EN/SC	Thn/10BT SCSI Ether. w/DT & PB cable $297
Mini EN/SC10T	10T SCSI Ethernet w/DT & PB cable $239
N10TA	10T FriendlyNet Media Adapter $65
NTNA	Thn FriendlyNet Media Adapter $65
AC+IIE64	Mac II & Perf 600, Thk/Thn, 64K $145
AAC+IIET64	Mac II & Perf 600, Thk, 10BT, 64K $145
AC3NB	Mac II & Perf 600, Thk/Thn/10BT, 64K $189
P1001	AsantéPrint, Thk/10BT or Thk/Thn $239

Star Net

StarNet 3 in 1 Card-NuBus, PDS, SE (Thk, Thn, 10BT)	$149
StarNet Thk/Thn for NuBus, PDS, SE	$99
StarNet Thk/10BT for NuBus, PDS, SE	$99
StarNet MicroSCSI Thn/10BT SCSI Ethernet	$249
StarNet Apple AUI Ethernet Adapter (Quadras, Centris, Laserwriters, WorkGroup Servers)	
Single Port 10BT or Thin	$69
Dual Port 10BT and Thin	$99
StarNet MAUI Products (Allows connection of two of the following products to one ethernet port, comp. with Quadras, Centris, Laserwriters, WorkGroup Servers)	$119

CLUBMAC NETWORKING

ClubMac EZ-Mac AAUI Transceiver	$59
ClubMac EMac-IIC (NuBus) 3 In 1 Card	$129
ClubMac SE30C (SE/30 and Mac IIsi) 3 in 1 Card	$129
ClubMac LCBT (LC, LCII, LCIII, Color Classic, Perf. 400)	$149
Ether-H12 14 Port 10BT Hub w/AUI & BNC & 12 RJ45	$399
19" rack mount, or desktop. Universal Power Supply	
Ether-H9 9 port 10BT Hub w/9 RJ45	$199
Wall mount or Desktop. Built in re-timing	

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RASTEROPS

DUOMATES

DuoMate 8	$399
DuoMate 16sc	$519

THREE 3 YEAR WARRANTY

GRAPHIC CARDS

24Mx / 24MxQ / 24XL	$599 / 1169 / 1869
PaintBoard Turbo XL	$1469
PaintBoard Turbo / Li	$1159 / 779
8XLi / 8XL	$899 / 459
ColorBoard 264/SE30	$459

MONITORS

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20"/20T Multiscan (2075RO)	$2495
20/20 Multiscan Color (2020C)	$1529
21" Mono/GrayScale (2110)	$995
15" ClearVue/15 Portrait (1510)	$399

MULTIMEDIA

MoviePak / with Adobe Premiere	$749 / 1129
MoviePak2	$1549
MediaTime	$1485
24XLTV / 24MXTV / 24STV	$2599/1639/745

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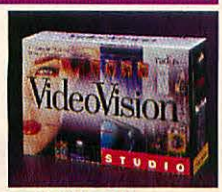

MONITORS

IntelliColor Display/20	$2589
PrecisionColor Display/20v	$1869
PrecisionColor Pivot	$919
Mono. Pivot Display/E	$565
Full Pg Display (FPD)	$445
Two Pg Display 20GS / 21GS	Call

GRAPHIC CARDS

PrecisionColor Pro 24X	$2069
PrecisionColor Pro 24XP	$485
PrecisionColor 24X	$1495
PrecisionColor 24XK	$809
PrecisionColor 8XJ	$485
Color Pivot/Pivot	$489 / 249
FPD / Two Pg	$189 / 375

MULTIMEDIA

VideoVision Studio	$3639
VideoVision Studio Upgrade	$1599
VideoVision (Presentation)	$1929
VideoVision (Basic)	$1599
Rocket 25i / 33	$979 / 1449
RocketShare	$399
PhotoBooster	$799

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Includes PhotoShop 2.5, ScanTastic & KAI's PowerTools

ES-800C	$1065
ActionScan 600	$799

ES-600C Scanner, PhotoShop 2.5 LE & ScanTastic

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	w/o FPU	w/FPU
33 MHz PowerCache	$335	$419
40 MHz PowerCache	$499	$585
50 MHz PowerCache	$625	$735

PowerCache Adapter $99
Required for non-Mac IIci, IIvi, IIvx, Performa 600

PowerCache Adapter (Classic/SE) $125

PowerCache Adapter $425
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20 MHz Turbo 040i	$699
25 MHz Turbo 040i	$749
33 MHz Turbo 040i	$835

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40 MHz Turbo 040	$1589
FastCache Turbo	$169

ClubMac Keyboard

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Eclipse 8 (8ppm,RISC,Ethernet)	$1279

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The Place to call first for great prices and service.

$35.

New!

UnderWare

Firebreathing dragons vaporize your trash can in this unique desktop diversion. It gives you all the fun of a screen saver while you work! Other screen savers only run while your Mac is idle, but UnderWare runs in the background on your desktop. And these modules don't just blank out your screen, they actually interact with the icons and windows. Like folders sprouting legs and walking off your screen. You get over 30 modules and After Dark modules work too. This is the hottest desktop diversion of the year. "You can't be cool if you don't have it," says Guy Kawasaki. Well, what are you waiting for?

Minimum requirements: Mac LC, 4MB RAM, System 7, Color QuickDraw.

Bit Jugglers

6931 UnderWare

$29.

New!

Disney ©
Actual size of pin 1¼"

The Disney Collection Screen Saver

Delight in the magic of Disney with all your favorite characters in this latest addition to the After Dark family! Enjoy over 15 fantastic sound-packed displays including *The Sorcerer's Apprentice*, *The Little Mermaid*, and *101 Dalmatians*. Includes screen-locking password protection.

Minimum Requirements: Mac Plus, 2MB RAM, System 6.0.4.

Berkeley Systems

6990 The Disney Collection Screen Saver * Free with purchase.

FREE PIZZA HUT PIZZA!

$99.

SuperPaint 3.5

Aldus SuperPaint 3.5 combines the best of paint and draw packages into one program. It's won 15 major awards in the last six years because it provides more "graphics horsepower" for the money. And for a limited time, get a $10 free pizza coupon for Pizza Hut inside your SuperPaint box. Take a break from the holiday bustle and get some free pizza on Aldus.

Minimum requirements: Mac SE, 2MB RAM, System 6.0.5, a hard drive.

Aldus Consumer Division

6493 SuperPaint 3.5

$224.

SupraFAXModem V.32bis MacPac

"The SupraFAXModem V.32bis is an excellent value," raves Tom Negrino of *Macworld*. It features 14,400 bps data and fax communications with up to 57,600 bps throughput using V.42bis data compression. The modem automatically negotiates the fastest connection, and sending a fax is as easy as printing. You can even delay transmission until times when long-distance rates are lower. The Silent Answer feature detects if an incoming call is fax or voice, and handles it appropriately. The MacPac includes cables, FaxMania, and WorldLink, FREE. FaxMania is a collection of fun cover sheets, and WorldLink lets you connect to the Internet.

Supra Corporation

4017 SupraFAXModem V.32bis MacPac
6651 SupraFAXModem 144 LC ..... $168.
5575 SupraFAXModem 144 PB ..... $298.

MAC'S PLACE FEATURED BUNDLE

$89.

New!

DATEBOOK PRO, TOUCHBASE PRO, and Quicken 4 Bundle

DATEBOOK PRO and TOUCHBASE PRO are now totally integrated, and with this specially priced bundle, you can organize your finances, save money, and save time. DATEBOOK PRO is a powerful calendar and time-management program. Calendaring, scheduling, to-do lists, and alarms combine to keep you informed. TOUCHBASE PRO stores information about your personal and business contacts. Print Rolodex cards, address books, envelopes, and more. Move from office to home without missing a beat. File synchronization updates records automatically. And Quicken 4.0 is the latest version of the popular personal and small business finance program. Print and automatically address checks, update your check register, keep track of tax information, and print detailed reports.

Minimum requirements: Mac Plus, 1MB RAM, System 6.0.5, a hard drive or external floppy.

Aldus Consumer Division

7056 DATEBOOK PRO, TOUCHBASE PRO, and Quicken 4 Bundle

$39.

Actual size 7"

FREE SNOOPY DOLL!

Yearn 2 Learn – PEANUTS

Match wits with Snoopy and the PEANUTS Gang and get a FREE Snoopy stuffed animal with your order! In Yearn 2 Learn–PEANUTS, kids can join in five activities where they learn and practice math, geography, reading, coloring, and more. Real-voice narration, zany sounds, and the appearance of Charles Schulz' much-loved characters make this a popular program with kids.

Minimum requirements: Any color Mac, 4MB RAM, System 6.0.7, a hard drive, 8-bit color and monitor.

Image Smith

6866 Yearn 2 Learn–PEANUTS (For ages 3-10)

New!

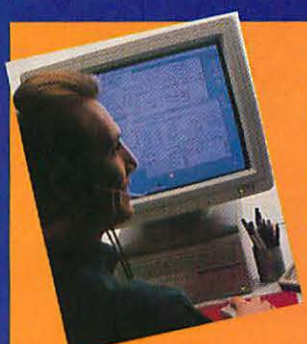
$16.

Holiday Lemmings

The Holiday Lemmings are here!!! Join your jolly green-haired friends in a wintertime romp through Lemming land. This special holiday version of Lemmings has 32 levels of award-winning Lemmings action in a snowy terrain, complete with bouncing snowmen, brightly wrapped holiday gifts, and an assortment of seasonal trimmings.

Minimum requirements: Mac Plus, 2.5MB RAM for B&W, 4MB RAM for color, System 6.0.5, a hard drive.

7001 Holiday Lemmings



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And always at a great price! Our custom database lets us manage our vast inventory with precision. So if it's available from the manufacturer, we've got it in stock – just a day away from your door.

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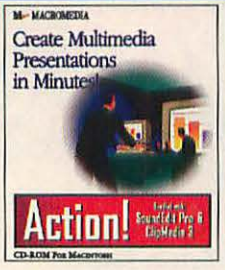
$239.

New!



Action! Bundle

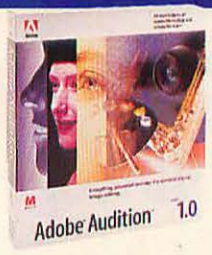
This bundle is all you need to create professional-quality, high-impact business presentations. It includes Action! multimedia presentation software, SoundEdit Pro, and Perfect Presentations ClipMedia 3. Action! is a revolutionary application that lets you create dazzling multimedia presentations with sound, motion, text, graphics, animation, video, and interactivity. Assemble your presentation scene by scene using built-in drawing and text tools, or import from other programs. Sixty ready-to-use templates are included. Perfect Presentations contains nearly 1000 digitized videos, graphics, photos, animations, and sounds to jazz up your work – all royalty-free! Then use SoundEdit Pro, the leading product of its kind, to create a fantastic sound track.

Minimum requirements: Mac IIci, 4MB RAM, System 7, color monitor, CD-ROM drive.

Macromedia

7048 Action! Bundle

$158.



Adobe Audition

Limited editions of two of the industry's leading graphics manipulation programs are now together in one package. Together Adobe Photoshop and Adobe Premiere give you everything you need to enter the world of digital image editing. Start with scanned photos or your own original footage. Or choose from 700 stock photos and dozens of QuickTime movie clips included on the bonus CD-ROM. With Adobe Photoshop 2.5 LE, you can add or correct color with a few simple keystrokes, execute delicate retouching, and even import filmstrips from Adobe Premiere LE and edit individual frames. With Adobe Premiere LE 2.1, you can combine video, audio, animation, still images, and graphics, then produce your QuickTime movie.

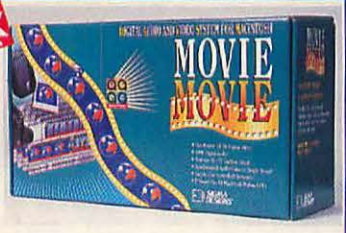
Minimum requirements: Premiere – Mac II, 4MB available RAM, System 6.0.7. Photoshop – Mac II, 2MB available RAM.

Adobe

6989 Adobe Audition

$298.

New!



Movie Movie

Display, capture, and play back full-motion QuickTime movies *with sound* on your Mac. Colorful full-motion video helps your presentation communicate more effectively, and this is a great value for synchronized video and audio capture. Movie Movie displays video at the standard 30 frames per second and captures NTSC composite video input from ordinary video cameras, VCRs, or laserdisc players. It digitizes the video, automatically synchronizes the audio, and creates a digital file you can see and manipulate right on your screen. Movie Movie samples 8-bit audio at 22kHz and gives you manual control over the recording level. Then you can edit your footage with included ScreenEdit software.

Minimum requirements: System 7, QuickTime 1.5, 16-bit graphics card recommended.

Sigma Design

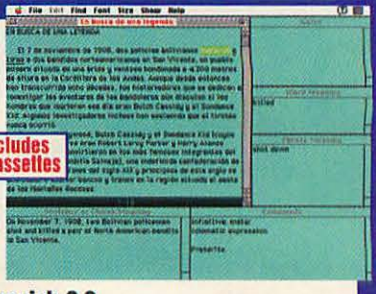
6986 Movie Movie

6987 Movie Movie w/VideoShop ..... $388.

$78.

New!

Includes 2 cassettes



$10 OFF.

Transparent Language: Spanish 2.0

The easiest, most enjoyable way to learn a foreign language.

Learn a language by reading interesting literature. It's true. You'll learn by reading and understanding rather than by drill and memorization. Just place your cursor on any text you don't understand and instantly see the meaning, grammar, and more. You read real literature that grabs and holds your attention, all in the original Spanish. You also hear the stories on the included audio cassettes. New to version 2.0 are word review lists and the VOCABULOUS! game. Also available in French, German, Italian, or Latin.

Minimum requirements: Mac 512K, System 6.0.

Transparent Language

4864 Transparent Language: Spanish 2.0

$88.

New!

Kai's Power Tools 2.0

Kai's Power Tools version 2.0 has been totally redesigned to boost your creative productivity. Software enhancements include an advanced color picker, intelligent keypad control, new transparency controls, real-time previews, and more. These image generators and filters deliver truly superb effects. Apply effects to images from within Adobe Photoshop, Fractal Design Painter, and other programs.

Minimum requirements: Any Mac with coprocessor, 4MB RAM, System 6.0.5.

HSC Software

6878 Kai's Power Tools 2.0 – U.S. and Canadian customers only.

$558.

NEW LOW PRICE!

Bernoulli MacTransportable Multidisk 150

Enjoy all the benefits of a Bernoulli with the flexibility to read and write to disks of many capacities – 35MB, 65MB, 105MB, and 150MB. And the Multidisk 150 is downward compatible so it reads and writes to 90MB disks and reads 44MB disks. You get unlimited storage expandability, lock-away security, and transportability. The patented Bernoulli design resists head crashes and the sturdy disks can survive a drop of eight feet! This Bernoulli is internally terminated with a single external SCSI connector, so it must be installed as the last device on your SCSI chain.

IOMEGA

5609 Bernoulli MacTransportable Multidisk 150

$69.

New!

Bullseye TrueType Font Collection

Running low on inspirational fonts? With over 330 new typefaces, the Bullseye TrueType Font Collection can add typographical zest to anything from business letters to 3D flying logos. At under twenty five cents per font, this package is a serious bargain. And it's all on disks so you don't need a CD-ROM drive.

Minimum requirements: System 7.

II Productive

6972 Bullseye TrueType Font Collection

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Prices good thru Dec. 15, 1993.

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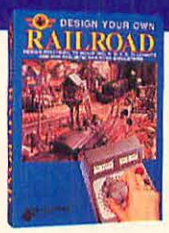


$39.

Design Your Own Railroad

All aboard. . . Now you can design precision, to-scale (HO, N, O, Z, S, G) layouts, right on your Mac. With Design Your Own Railroad, you control all the elements of model railroading – coupling, uncoupling, switching, bridges, crossings, everything. Once you've got a layout, climb aboard the train you created and barrel down the tracks.

Minimum requirements: Mac Plus, 1MB RAM, System 6.0.7.

Abracadata

6428 Design Your Own Railroad

New!

$36.

Spaceway 2000

Test your intergalactic combat driving skills! Spaceway 2000 is a high-speed, alien-infested freeway. Watch out for all the bad guys like Blockers who follow your movements like bad mimes and keep you from passing. Use laser cannons, automatic shields, and more to battle your way through.

Minimum requirements: Mac Plus (LC recommended), 2MB RAM, System 6.0.5, hard drive, 4MB RAM for color.

Casady & Greene

6906 Spaceway 2000
5956 Crystal Crazy $36.
6907 ZOA $36.

$39.

Sailing Master

Don your sailing cap and deck shoes as you race against your Mac and learn how to sail without getting wet. Sail against as many as three boats, and learn about wind shifts. Course options, skill levels, hazards, and other features offer a challenge for land lubbers and old salts alike. "Sailing Master is a lot of fun – well worth the price," says *Macworld.* (Nov. '93)

Minimum requirements: Mac 512K.

Starboard Software

5318 Sailing Master

New!

$49.

FLOWERscape

Plan your spring garden now with FLOWERscape! View its growth in color, as it would appear in any month of the year. Through its easy-to-use interface, FLOWERscape helps you choose what to grow and where to grow it. Just enter soil, sun, and geographic information, and the program recommends suitable plants. Includes FREE pH test strips.

Minimum requirements: Any Mac with a 256-color monitor and high-density floppy drive, 1.5MB RAM, System 6.0.4, 8.5MB hard disk space.

Voudette

6701 FLOWERscape
6702 FLOWERscape-Windows ...$49.

New!

$32.

Axis The Gamecheater

It's a win-win situation with The Gamecheater, the world's first game utility. Your weaponry is superior and you are immortal. Axis The Gamecheater lets you override predefined game functions with assignable hot keys. Add time, lives, money, extra ammo or fuel, and jump to different play levels in your favorite games – whatever it takes to win.

Minimum requirements: Mac Plus, 1MB RAM, System 6.0.7.

Baseline

6896 Axis The Gamecheater

New!

$41.

ReadySetGrow!

Waaaa! Why didn't someone come up with this sooner? It's a fun, interactive guide for expecting parents that covers all facets of pregnancy and early childhood. Animation, illustrations, sound effects, and text combine to create a thorough reference. ReadySetGrow! also includes sections for a family profile, medical records, calendar, and address book to record the history of your child's beginnings.

Minimum requirements: Any Mac with 1MB RAM (2MB RAM recommended), System 6.0.5, a hard drive.

Atlantis

6991 ReadySetGrow!
6992 ReadySetGrow! Windows ...$41.

$48.

F/A-18 Hornet

Get ready for the ride of your life in the cockpit of an F/A-18 Hornet. Each of these 28 missions takes you deep into a new conflict in the Middle East. Incredible fast and fluid graphics, leading edge 3D technology, and stunning custom sound will have you sweating through the heat of each battle. Battle with or against up to three other players on a network.

Minimum requirements: Mac SE/30, 3MB RAM, System 6.0, 8-bit color.

Graphic Simulations Corporation

6502 F/A-18 Hornet

New!

$37.

Gus Goes to Cybertown

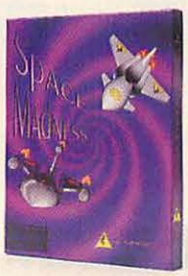
Join Gus, the hippest, most lovable dog ever in this multimedia learning experience. Search Cybertown for the elusive Cyberbuds, three intriguing friends your kids will love. This CD-ROM is completely interactive and has original songs, full-motion video, and captivating graphics and animation. Kids eight and under learn about counting, the alphabet, history, and more.

Minimum requirements: Any Mac supporting 256 colors, 4MB RAM, System 6.0.7, a CD-ROM drive.

Modern Media

7014 Gus Goes to Cybertown CD-ROM

$28.



Space Madness

Save the galaxy from an evil alien invasion! Sound familiar? Well, you've never seen it like this. Bright, impressive, 3D graphics and equally lush sound help make Space Madness "state-of-the-art shoot-'em-up in the grand tradition," says *Inside Mac Games.* In fact, they gave it a four out of five rating. Unlike other games of this type, everything interacts with everything else. So enemy ships can shoot each other, and when you blast an enemy base at close range, you may find your ship damaged. The ultra-smooth 60 frames-per-second animation keeps the action fast, and lots of variety will keep you hooked.

Minimum requirements: 2.5MB RAM, System 6.0.7, 2MB hard drive space, 8-bit color or grayscale.

High Risk Ventures

6490 Space Madness

$39.

New!

Pathways into Darkness

Think fast! You'll have to if you're going to keep up with continuous-motion, 3D, texture-mapped graphics and defeat an alien demon. As a member of a secret special forces team, you've been dropped by parachute near the site of a pre-historic asteroid impact. Separated from your team and unable to locate them, you assume the worst, and embark on your mission to save the world, alone. You'll need your wits, not just firepower, to get by many of the obstacles. Explore miles of catacombs through a smooth-scrolling, first-person interface. Beautifully rendered graphics and active panning stereo sound combine to make Pathways Into Darkness the closest thing to virtual reality without a helmet.

Minimum requirements: Any 256 or 8-bit color Mac, 2MB RAM, System 6.0.5, 5MB hard disk space.

Bungie Software

6639 Pathways into Darkness

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- CD-ROM Product
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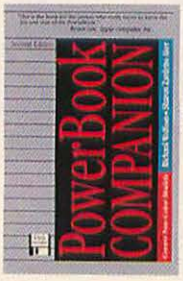


PowerBook Companion

PowerBook Companion contains a wealth of practical solutions for the most common and difficult issues facing PowerBook users. This Second Edition has been updated to cover all the latest PowerBook models including the Duos and color PowerBooks. Topics include set up, software installation, getting connected, care and maintenance, hardware upgrades, peripherals, and components. And within each topic, the differences between portable and desktop computing are addressed. A disk containing a bunch of handy PowerBook utilities is also included. You'll get applications for battery management, cursor control, and file synchronization. "The computer book of the year." – *MacUser.*

Addison-Wesley

7058 PowerBook Companion

$148.

Rae Assist

Rae Assist has everything you need to successfully manage your contacts, schedule, to do's, projects, notes, pictures, and other personal and business information. All your information is in one convenient and highly-integrated application. Freely tag and link information for easy retrieval. For example, you could list or find all entries that are tagged "clients" or "suppliers." Tags are fully customizable, and linking files keeps you organized. A built-in smart assistant helps you save time. Easily enter and import your data once, and start using it in multiple ways. Quickly find, sort, and print all your information. It was designed with PowerBook users in mind. *MacUser* called it "The Super-PIM."

Minimum requirements: LC, 2MB RAM (2.5MB RAM recommended), System 6.0.7, 5MB hard disk space.

Rae Technology, Inc.

6624 Rae Assist

$198.

ClarisWorks 2.0 with Quicken 4

Until Jan. 31, 1994, get Quicken 4 FREE! It's the fastest, easiest way to organize personal and small business finances. ClarisWorks offers you a single application where you can seamlessly combine text, graphics, spreadsheets, and charts all within the same page on the same screen. It's perfect for small businesses, home offices, corporate managers, and notebook users.

Minimum requirements: Mac Plus, 2MB RAM, System 6.0.4.

Claris

6144 ClarisWorks 2.0 with Quicken 4

$138. New!

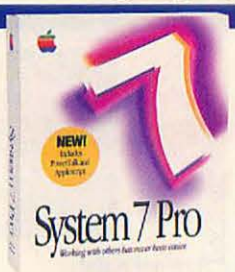
SCSI MicroDock

Expand the capabilities of your PowerBook Duo with this light weight, low-cost, extremely small docking bar. It lets you easily connect your Duo to ADB devices like a mouse and SCSI devices like a SyQuest or CD-ROM drive. And you can use the same SCSI cable to connect your Duo to another Mac, and have it appear as another hard drive on the other Mac's desktop.

Newer Technology

6904 SCSI MicroDock

$138. New!



System 7 Pro

System 7 Pro gives you System 7 with new PowerTalk, plus AppleScript and QuickTime software in one package. PowerTalk allows you to correspond and work with others using built-in mail and collaboration services. Use your modem or an AppleTalk network to send messages of any type – including text, images, video, and sound – to other System 7 Pro users. AppleScript is a system level "macro" language that lets you use pre-scripted automated tasks with the click of a button. With AppleScript, you can use your favorite off-the-shelf applications to create powerful, cost-effective solutions. QuickTime is Apple's industry-leading multimedia technology. It lets you view, copy, and paste video animations, images, and sounds as easily as you manipulate text.

Minimum requirements: 4MB RAM (5MB recommended), a hard drive, Apple SuperDrive floppy drive.

Apple

6797 System 7 Pro

5255 System 7 Personal Upgrade Kit ..... $54.

How to Order

- Call 1-800-896-0009 anywhere in the USA or Canada. Call 406-758-8000 for international orders.
- Fax your order to 1-800-881-3090. International fax orders: 406-758-8080
- For electronic orders, use Compuserve (76635,660), GEnie (MACSPLACE), or America Online (MacsPlace).
- Mac's Place is open from 6 a.m. to 10 p.m. M-F Mountain Time, and 7 a.m. to 6 p.m. on Sat., and 8 a.m. to 5 p.m. on Sun.
- No sales tax (except OH residents add 6% to total, including shipping).
- VISA, MasterCard, Discover Card, American Express, OPTIMA, checks, and P.O.s gladly accepted. Your credit card is never charged until your product ships.
- All in-stock items ship same-day, (barring system failure, etc.) to your doorstep, for just $3 (USA) via Airborne Express overnight service. Rural locations may require an additional day for delivery. Areas not serviced by Airborne Express will be sent via Priority Mail.
- Our $3 shipping charge includes insurance at no extra charge.
- When a partial order is shipped, we pay freight on additional shipments.
- Many products carry a money back gurarantee (MBG).
- Defective software is replaced immediately with like items. Defective hardware items repaired or replaced at our discretion.
- We reserve the right to revoke money back guarantee privileges.

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- Call 406-758-8000 for our international sales line.
- Fax your order to 406-758-8080 for international orders.
- We ship throughout the free world.
- International orders will be charged full shipping rates plus insurance.

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$39. $10 OFF. SPECIAL PROMO

Square One

Square One stores all of your favorite files in an easy-to-use icon palette. To access a file, just double click on its icon. Group several files into a single work-group icon and open them all at once. No more time wasted rummaging through your hard drive, and no goofy hierarchical menus. Just point and click with Square One.

Minimum requirements: Mac Plus, 2MB RAM, System 7.

Binary Software

7027 Square One

$64. New!

Now Contact

New Now Contact is a complete contact manager that fully integrates with Now Up-to-Date to create the ultimate personal information manager. It's designed so efficiently that it launches, finds, and sorts instantly. So you won't be waiting for information when you need it. And it stores lots of contacts in a small amount of disk space. Now Contact also includes a full-featured word processor.

Minimum requirements: Mac Plus, 2MB RAM, System 7, a hard drive.

Now Software

6919 Now Contact

IMS — The Intelligent Choice

800-243-4IMS

RasterOps

DuoMate 16sc	$519
20/20C	$1515
2075RO	$2489
PaintBoard Li	$799
PaintBoard Turbo	$1109
24STV	$739
Media Time	$1479

DAYSTAR DIGITAL

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	w/o FPU	w/ FPU
33MHz PowerCache	$335	$419
40MHz PowerCache	$499	$585
50MHz PowerCache	$625	$735
20MHz Turbo 040i		$699
25MHz Turbo 040i/040	$749	$919
33MHz Turbo 040i/040	$835	$1085
40MHz Turbo 040		$699

WACOM

6" x 8" ArtZ ADB Tablet	$299
6" x 9" Standard	$462
12" x 12" Standard	$660
12" x 18" Standard	$990
12" x 18" Electrostatic	$1059

Quantum

FWB HDT PE software included FREE!

ELS Series	Access	Int.	Ext.
85MB	17ms	$165	$225
127MB	17ms	$185	$245
170MB	17ms	$189	$249
LPS Series			
240MB	10ms	$255	$315
525MB	10ms	$615	$675
PRO Series			
425MB	9ms	$499	$559
700MB	10ms	$779	$839
1.0GB	10ms	$899	$959
1.2GB	10ms	$999	$1059
GO•Series			
80MB	17ms	$209	$309
120MB	17ms	$265	$365
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SyQuest, Fujitsu, Micropolis, Maxtor drives also available. Please call for a competitive quote.

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- **Mini Housing** $99

FOR THE POWERBOOK

SCSI - Gear $29

Adapts standard SCSI cable to PowerBooks HDI-30 SCSI connector. Works on all PowerBooks including 100 and Duo models.

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Ergo-View 14	$399
Power Portrait	$549
Movie Movie	$299

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25MHz	$199	$299
40MHz	$289	$379 . . $99
2300 Series - for Classic		
25MHz	$199	$299
40MHz	$289	$379 . . $99
4300 Series - for LC,LC II,Performa 400 & Color Classic		
40MHz	$379	$505
6400 Series - for IIsi,IIci,IIvi,IIvx & Performa 600		
25MHz		$806
33MHz		$999
40MHz		$1210
DataLink PB		$469
Plus Drive		$299
PowerCharge Single		$69

UMAX

Umax scanners bundled with Adobe PhotoShop.

UC630 LE/Full	300 x 600 res.	$789/959
UC840	400 x 800 res.	$1248

Agfa Arcus Plus 600 x 1200 res. **$Call**

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Sigma Designs 14" Color Trinitron Multi-resolution Trinitron display. 25mm dot pitch

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Displays & Cards

RASTEROPS®

RasterOps /20T Multiscan Color Display 20" color Trinitron display. .30mm dot pitch

VIDEO CARDS

PaintBoard Turbo New 7" 24-bit accel. color for screens up to 20" at 1024x768	1149
PaintBoard Turbo XL New 7" 24-bit accel. color for screens up to 21" at 1152x870	1449

DUO DOCKS

Duo Mate 8 8-bit/21" video out, HD 1-20, floppy, ADP, stereo	419
Duo Mate 16SC 16-bit/21" video out, SCSI, HD 1-20, floppy, ADP, stereo	539

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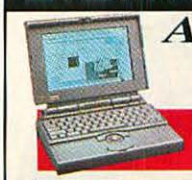

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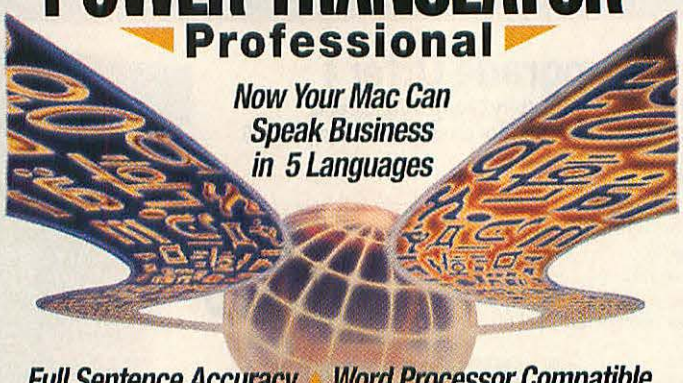

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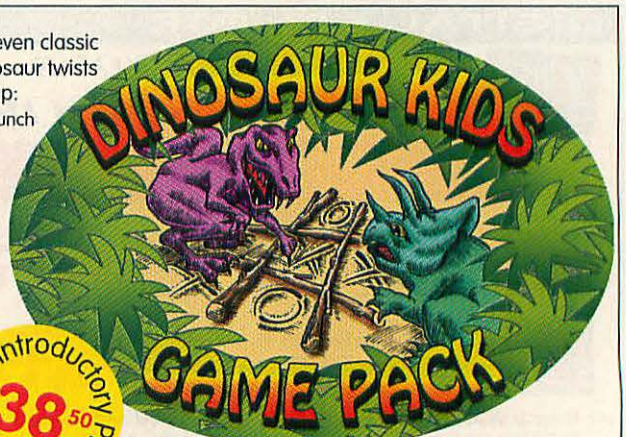

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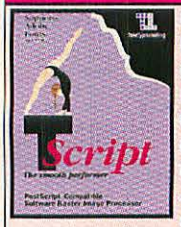

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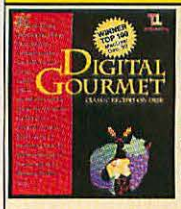

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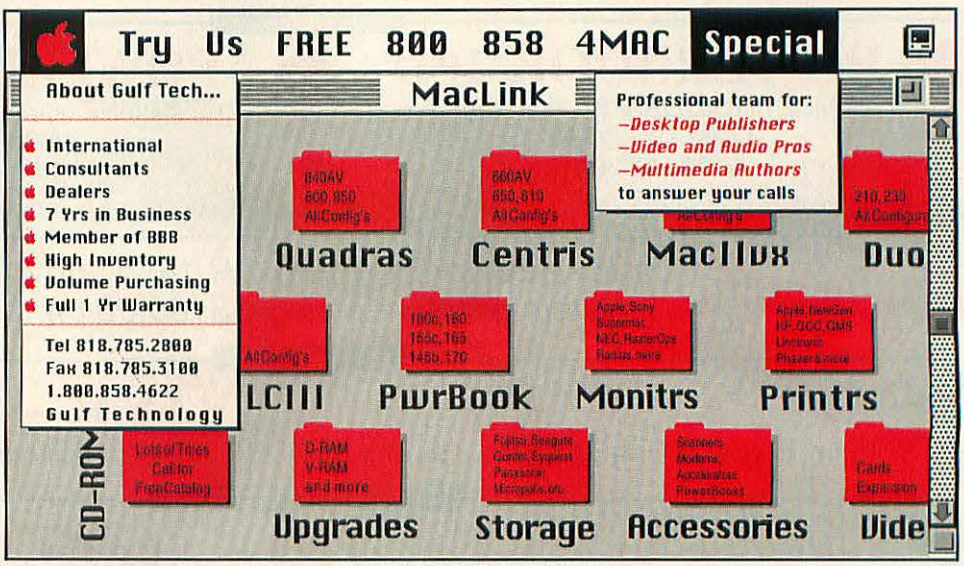

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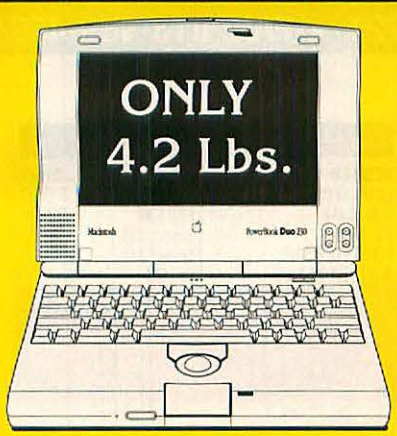

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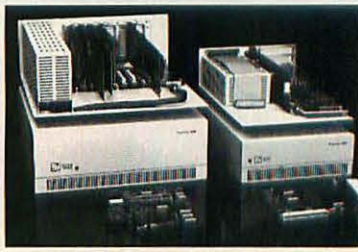

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425MB	LPS525	10ms	$529	$579
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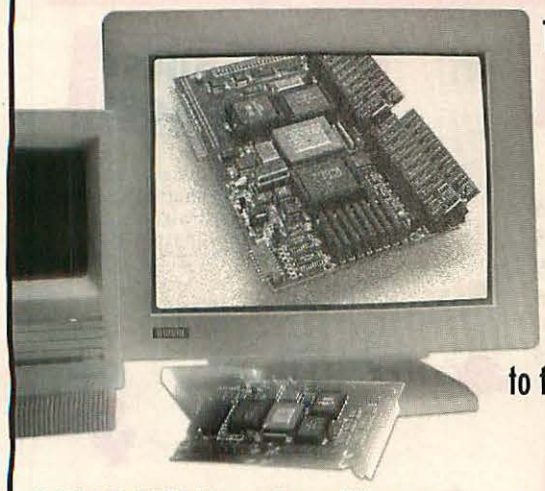

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see pricing at right

ImagePro and Quik30

	For Mac SE	15" ImagePro System	19" ImagePro System
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33 MHz	635.00	925.00	1,065.00
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25 MHz	355.00	N/A	N/A
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*ImagePros and systems, add $90.00 to above prices for Mac Plus/Classic
*Quik30s, add $40.00 to above prices for Plus, $95.00 for Classic

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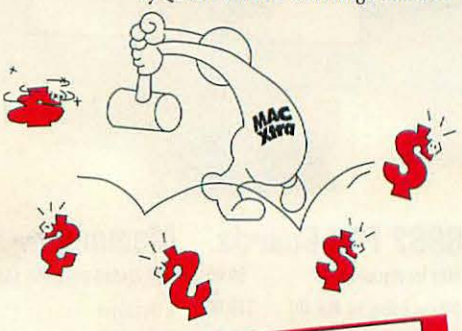

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1.2gb	3.5"	10ms	$1070$1130	

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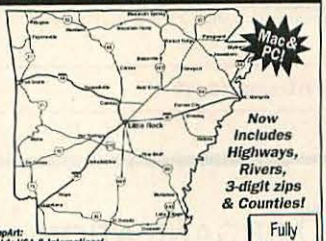

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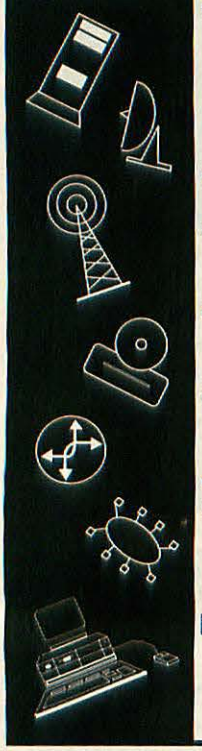

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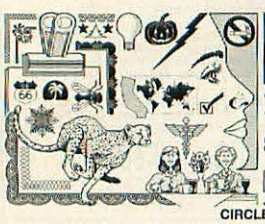

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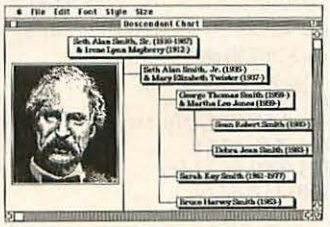

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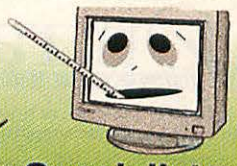

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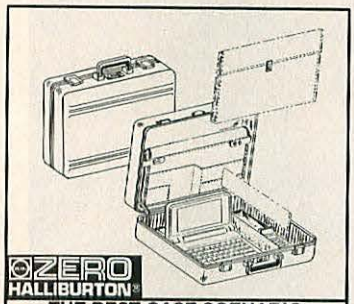

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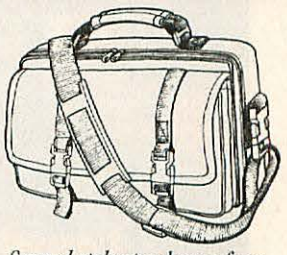

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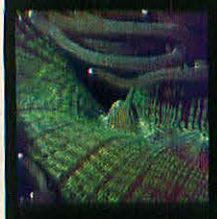

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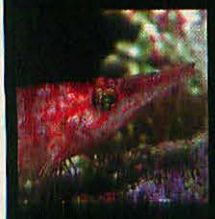

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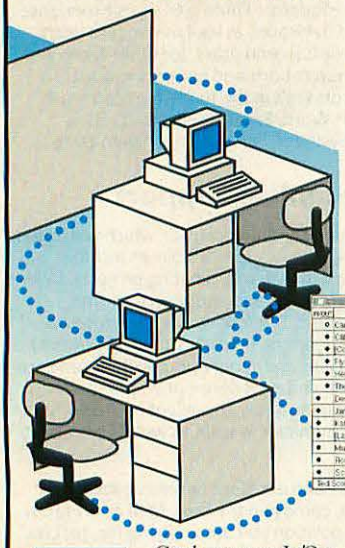

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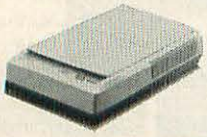

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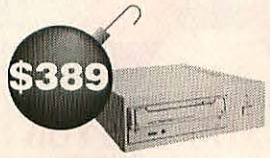

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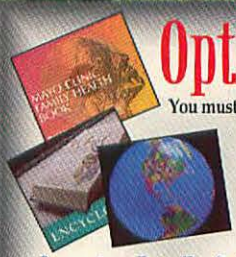

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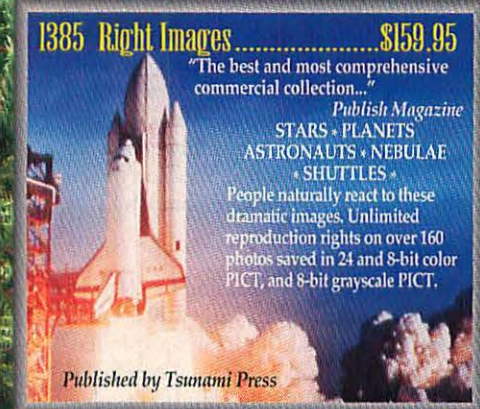

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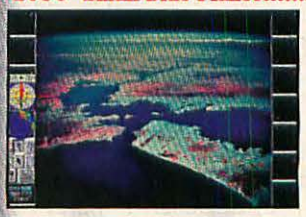

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WISE GUY

BY GUY KAWASAKI

Defying Gravity

How to succeed by really trying

ONE THING THAT MAKES MY blood boil about the Macintosh software market today is that big companies like Claris, Symantec, and Central Point Software are telling the proverbial two guys in a garage that it's too late to start a company. This drives me crazy because it stifles the creative, can-do spirit of Macintosh. I know from recent experience that two people in a garage can still make history.

Getting into the Market

On October 30, 1989, Terry Morse and a few fellow employees from Mansfield Systems went out to lunch to celebrate his birthday. Unfortunately, he had to pay for his own lunch because that morning the company announced that it would be closing down. Its venture capitalists had grown tired of pouring money into the company. (Lesson 1: Never eat out on the day your company goes broke.)

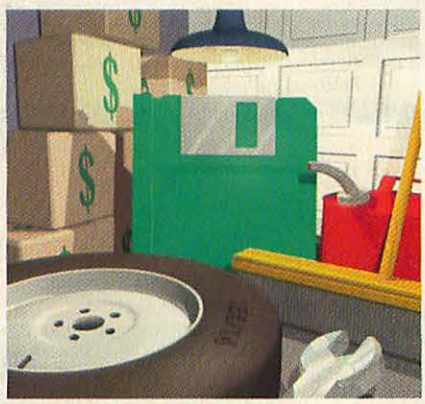
Lloyd Chambers, a fellow employee, and Morse found themselves unemployed and out of money. Between the two of them, they had $12,000 from Morse's 401K plan, $5000 from Morse's parents, and a short stack of Chambers's credit cards. So it made perfect (Macintosh) sense to start a company.

Morse and Chambers's first product was Partner, a precursor to the publish-and-subscribe technology that you still never see anyone using. Morse and Chambers shipped version 1.0 of Partner six weeks after Mansfield went under. (Lesson 2: Ship something quickly and get into the marketplace.)

In the past, Chambers had created a freeware product called MacCompress that compressed and expanded Macintosh files on Unix computers. While completing Partner, he worked on another file-compression utility that would become DiskDoubler. Chambers intended to distribute this as a shareware product or to use it as a gift with the purchase of Partner. (Lesson 3: Let programmers work on whatever they want to.)

Morse and Chambers started showing off Partner and beta versions of DiskDoubler at Computerware, an all-Macintosh software and peripherals store in Palo Alto, California. They noticed that DiskDoubler—not Partner—was getting the oohs and aahs. Luck, or Macworld Expo impresario Mitch Hall's mistake, stepped in: the San Francisco Macworld Expo was in April that year, not January. Morse and Chambers had three extra months to finish DiskDoubler.

In four days at the show, Computerware sold 500 copies of DiskDoubler. By the summer of 1990, Morse and Chambers were selling 1000 copies a month. They knew they needed outside, experienced advice, so they contacted Marty Mazner, the former publisher of *MacUser* and former executive vice president of Computerware.



Seeking Outside Help

Mazner understood the potential of DiskDoubler, but he also knew that if an established company entered the market, Morse and Chambers might be snuffed out. So he arranged to show DiskDoubler to Symantec, and asked me to come along. The suit (he's subsequently "left" Symantec) who ran the meeting had worked at Ashton-Tate, he had Symantec's clout, and he was going to walk all over Morse and Chambers and bestow upon them the honor of adding DiskDoubler to Symantec Utilities for Macintosh (SUM) for a pittance in royalties. I wanted to puke.

In Symantec's parking lot, Morse told me he needed $25,000 to get a company going, and yours truly promised it to him. Salient Software incorporated in June 1990 with $50,000 of capital from myself, Marty, and Salient's law firm. (Lesson 4: Ask and you shall receive—if you have a great product.)

With Mazner's help, Morse and Chambers bootstrapped DiskDoubler by trading copies of it for ad space in leading mail-order catalogs. Morse and Chambers didn't take any salary for four months, until Salient's monthly sales were about $50,000. (Lesson 5: You don't need millions to start a software company.)

Cashing Out

Salient's sales kept increasing by 10 to 15 percent a month until June 1991, when System 7 shipped, and sales exploded. DiskDoubler had become a successful product in a seemingly infinite number of small upgrades. (Lesson 6: Constantly enhance your product—don't believe the quantum-leap upgrade theories.)

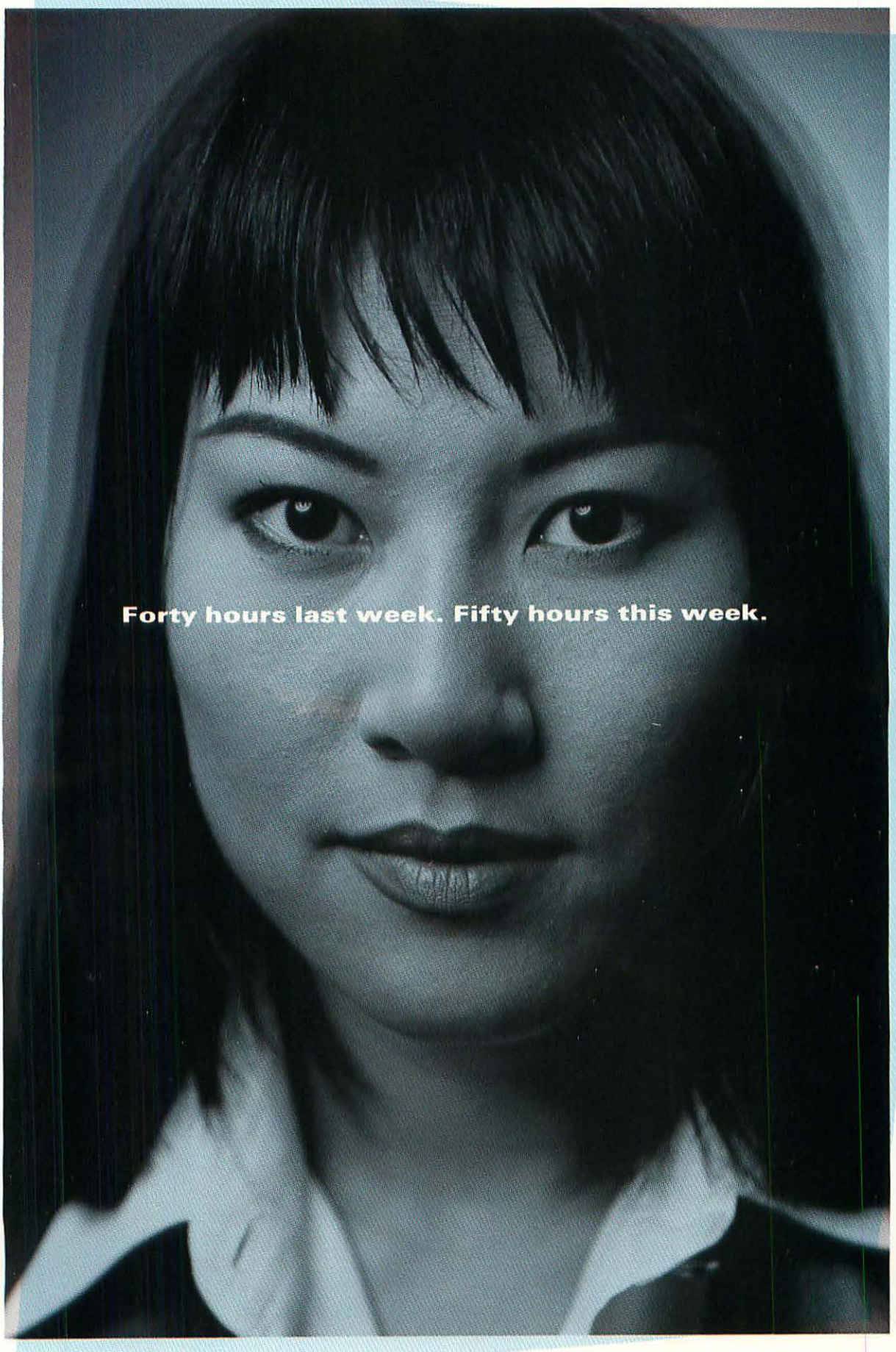
By the end of 1991, Salient was selling $2 million of product a year. In June 1992, Salient had amassed year-to-date sales of $3.5 million, and Mazner worked out a deal to sell Salient to Fifth Generation Systems for a price I cannot disclose. Suffice it to say that Morse and Chambers consider never working another day in their lives to be a viable option. (Lesson 7: You can still make a lot of money with Macintosh software.)

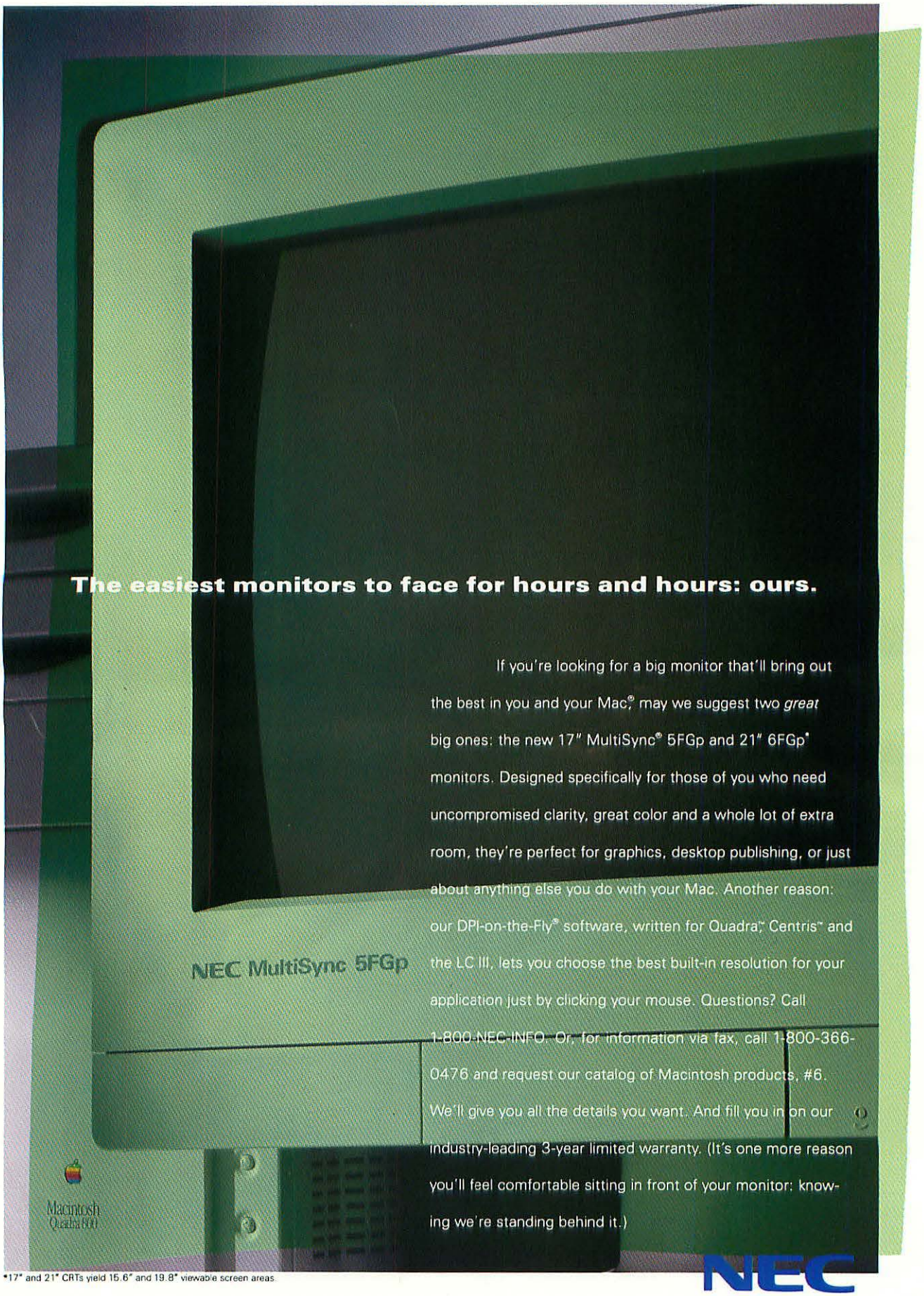
Getting out of the Garage

Two guys in a garage can still succeed. It took Morse and Chambers only three years. They weren't intimidated by bozos who work for large companies, and who have never started a company but are willing to tell you why you can't. They created a product that was simple, easy to explain, and did a few things well. If you believe in yourself and work your ass off, you can defy gravity, too. And you can take this to the bank. **m**

GUY KAWASAKI's views are his own and only sporadically represent those of *Macworld*. His current book, *Hindsights*, will be published by Beyond Words Publishing in January. He has investments in Bit Jugglers, Global Village Communication, Bookmaker Corporation, and others. He can be reached at Kawasaki@radiomail.net.

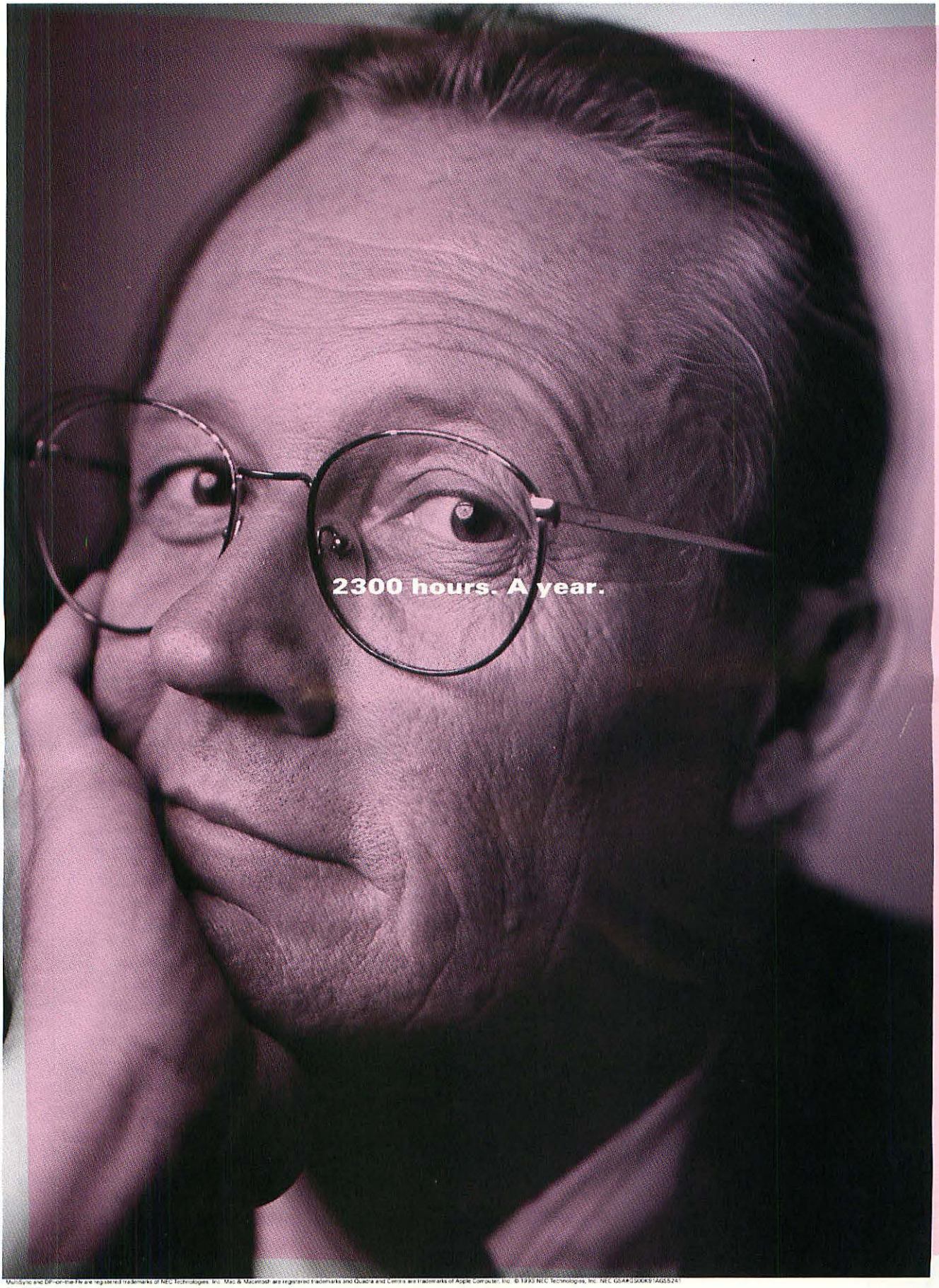
SCOTT BALDWIN


Forty hours last week. Fifty hours this week.



*17" and 21" CRTs yield 15.6" and 19.8" viewable screen areas.

Circle 16 on reader service card



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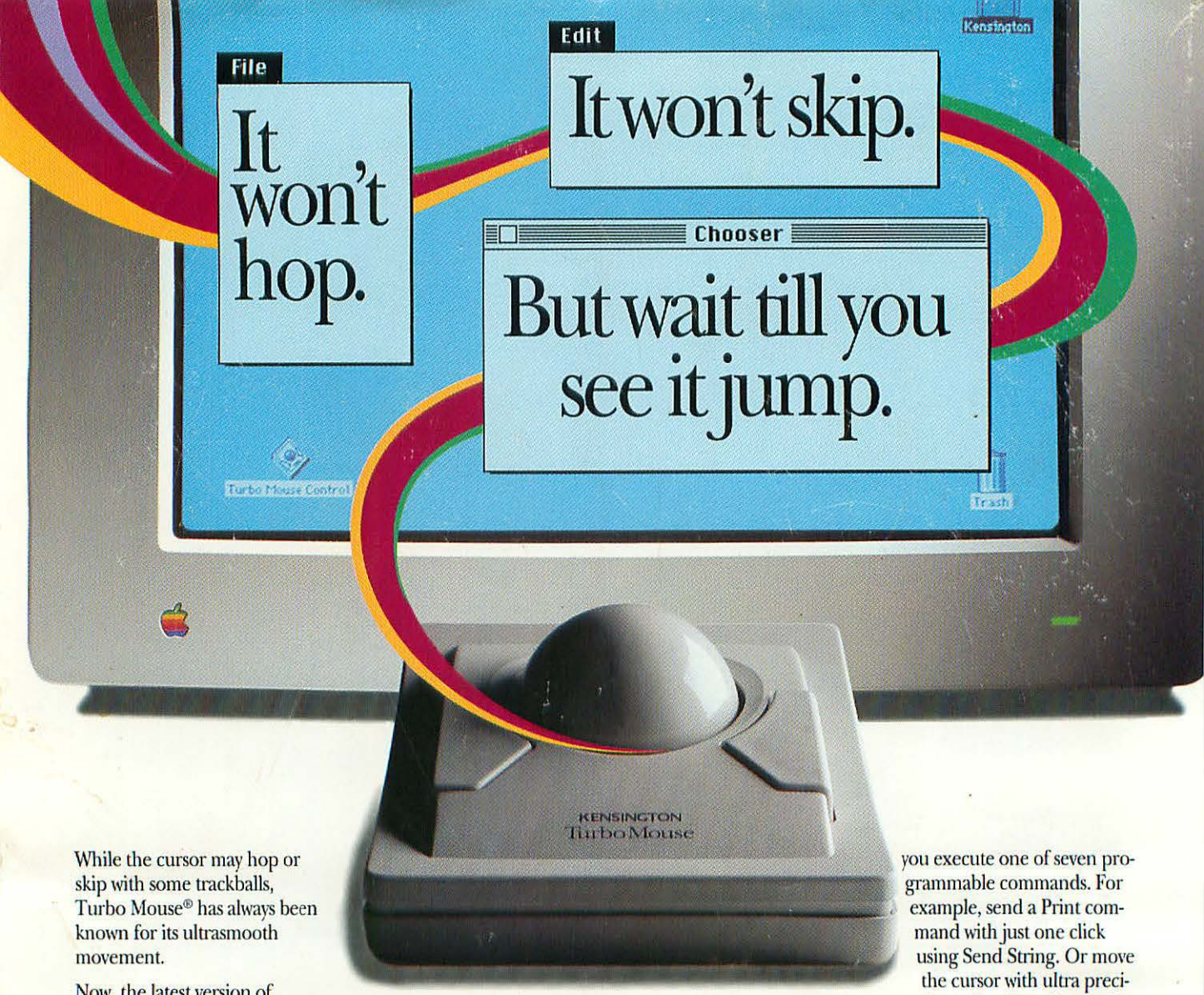

While the cursor may hop or skip with some trackballs, Turbo Mouse® has always been known for its ultrasmooth movement.

Now, the latest version of Turbo Mouse is known for something else—jumping. Our new Brilliant Cursor technology makes it possible.

With it, you can move the cursor instantly to predefined HotSpots on the screen, such as the File and Edit menus and the Trash icon.

First, you define your HotSpots. Then, click a button and move the ball in the direction you want to go. The cursor automatically jumps to the predefined HotSpot. You can even program in different HotSpots for different applications and for different users.

And Brilliant Cursor technology is not all that's new with Turbo Mouse 4.0. Also new is advanced acceleration with three levels of control and Enhanced Mouse Buttons that let you execute one of seven programmable commands. For example, send a Print command with just one click using Send String. Or move the cursor with ultra precision using Slow Cursor. Even save different combinations of commands for each of your favorite programs.

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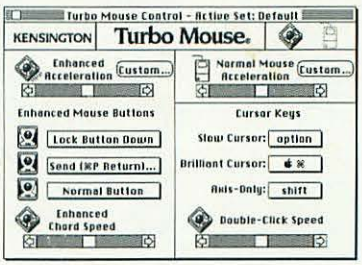
Introducing Turbo Mouse 4.0

With the all new Brilliant Cursor™ technology, you can actually make the cursor jump to any spot on the screen.



KENSINGTON

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